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COMPUTERWORLD

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March 21, 1973 Vol. VII, No. 12

3348 Data Module

115 Arrives With New 370 Disk

Smallest 370 S/3-Compatible

By Michael Weinstein
Of the CW Staff

WHITE PLAINS, N.Y. – IBM has unveiled the long-expected 370/115 as an entry-level machine – to the "virtual memory" 370 series – for users of IBM System/3s and smaller 360 models.

A new disk device – the 3340 direct access storage facility – and the 3203 printer were released concurrently with the 115.

In keeping with efforts to facilitate moving into the 370s, IBM has allowed DOS users to move to the new computer with little or no reprogramming of existing applications, a spokesman said.

"An optional integrated emulator is available for users of the 360/20. The 115 also can run applications written in RPG II and Cobol, providing a smooth transition for S/3 users," he added.

The 3340 can be used with any 370 operating under DOS/VS; the new printer, also supported by DOS/VS, can be used with either the 370/115 or the 370/125 – the two IBM systems that have incorporated controllers within the mainframe.

A technological advance used in the 3340s over standard disk packs is the combination of disk-recording surfaces, access arms and read/write heads into a single cartridge.

Thus, the head that records the data is the head that reads data – "eliminating problems caused by minute head-to-track misalignment," according to IBM.

The Model 115 comes in 65K characters which can be expanded to 98K characters. Cycle time for main storage is set at 480 nsec for two bytes of information.

IBM 370/115 With Console and Four 3340 Disk Drives

This cycle time is a result of using semiconductor technology in the memory and makes the 370/115 "more than seven times faster than the ferrite core storage used in the 360 Model 20-4."

Instruction execution rates are up to 1.5 times faster than the 360/22 and up to three times faster than the 360/25, the spokesman asserted.

In addition to main memory, the 370/115 contains 20K words (22-bit word) of reloadable control storage which is loaded from a magnetic disk cartridge.

Reloadable control store is used for running emulations, system monitoring and other system functions.

To ease conversion problems that might

(Continued on Page 2)

Double Standard For Basic? Group Likes the Idea

By Don Leavitt
Of the CW Staff

WASHINGTON, D.C. – A standard for Basic should be developed to include many of the extensions already available in current versions of the originally very simple language, according to an ad hoc group organized by the Standards Planning and Requirements Committee (Sparc) of the American National Standards Institute (Ansi).

The study group was set up by Sparc in August 1971 at the suggestion of Prof. J.A.N. Lee of the University of Massachusetts. Its task was to determine the technical feasibility and economic justification for a Basic standard.

Prof. Thomas Kurtz of Dartmouth, one of the codevelopers of the language, has chaired the study group and a positive recommendation "is not entirely a surprise," in the view of at least one industry observer.

The proposal is expected to be approved at Sparc's meeting March 25, and a formal standard development committee would be organized after that, under Ansi's X3 Computers and Information Processing Committee.

Lee wanted a standard that would prevent the language from becoming distorted from its original purpose.

Though the final report sees the need for a full standard, the recommendation is phrased in such a way that it leaves the door open for standardization of both an extended Basic and a basic Basic, much as Fortran has been defined on two levels, one a subset of the other.

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State Acts to End Storage Of Crime Intelligence Data

By Michael D. Sorkin
Special to Computerworld

DES MOINES, Iowa – A total ban on using computers in Iowa to store police intelligence data is a step closer to reality with approval of legislation by the State Senate.

The legislation – based in large part on model legislation recommended by Project Search, a Law Enforcement Assistance Administration program – is believed to include the toughest restrictions yet on criminal justice computer uses of any state.

Manual Files Regulated

The legislation not only bans police intelligence data kept in any computerized form but also regulates the information police may keep in their manual files.

The bill prohibits police from keeping any surveillance data in manual files on any individual, organization or assembly of persons "unless a criminal act has been committed or is imminently threatened."

Without the legislation, which now goes to the Iowa House where ratification is expected, police currently can collect any intelligence data on individuals and circulate the information through newly acquired police computers, which are expected to have a National Crime Information Center (NCIC) link in the near future.

Last year it was revealed that for nearly a year Des Moines area police had been collecting unsubstantiated or incomplete intelligence data about citizens from paid informants and other sources and placing the data in the city's municipal crime computer [CW, Sept. 20, 1972].

The computerized data labeled individuals as "known criminals," even though some of the information was on persons with no criminal convictions and in some cases, with no arrest records.

The legislation is directly aimed at prohibiting such police activities. Iowa Gov. Robert Ray pledged during last fall's elec-

(Continued on Page 5)

Rap Sheets and GAO–Part 1

FBI System Under Attack

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – The present operation of the Computerized Criminal History (CCH) system is under attack and the FBI and the Law Enforcement Assistance Administration (LEAA) have been told to develop new ways to improve the reporting of arrest and disposition data in the system.

The FBI's Computerized Criminal History system has often been attacked by sources outside the government because of a possible invasion of privacy and lack of security for confidential information.

Now the General Accounting Office has joined the critics.

This series examines the GAO criticisms.

The General Accounting Office (GAO) said in a report that Congress should not appropriate further funds for the system until "the FBI and LEAA implement a program for improving the reporting of arrests and dispositions by law enforcement agencies, courts and correctional institutions."

GAO, an independent agency reporting to Congress on the effectiveness of various government programs, said law enforcement agencies and others "are not reporting all arrest and disposition data to the state agencies which enter such data into the system" at the present time.

"Until such reporting is improved, the exchange system cannot be fully effective. System users must be certain they are aware of all of an offender's prior arrests and their dispositions."

"Until they do," the congressional "watchdog" agency said, "system users have no assurance that the data they receive is complete or accurate."

FBI Takeover

The CCH system was designed by an LEAA program called Project Search, but after it was proven 'feasible' it was taken over by the FBI as part of the National Crime Information Center.

The system provides for the computer storage and exchange of criminal histories

(Continued on Page 5)

DP Science Crisis Demands Course Revision: Perles

By Don Leavitt
Of the CW Staff

COLUMBUS, Ohio – Computer scientists must believe that "computation is an indefinitely perfectable activity," and if that is true, the commercial DP establishment must be considered as their adversary, according to Dr. Alan Perles, Eugene Higgins Professor at Yale University and former president of the Association for Computing Machinery.

Speaking here recently, Perles said no matter how innovative industry may seem, it really has "a huge investment in entrenched incompetence." It has to be more pragmatic than the academic computer scientist, but that must not deter the universities from their role, he added.

"What industry says it wants is exactly what we should never train our students to do," he told the dinner meeting of last month's Computer Science Conference. Even those students preparing to go into the business world should not be trained directly for that work, he added.

The standard programming languages should not be formally taught in the universities any more than English is taught as a subject for credit. "After all, Fortran is a vox populi – a language of the streets – in the world of data processing, and it can be absorbed informally through conversations in dining halls or from thoughts scribbled on the walls of public toilets," Perles commented, partly in jest.

What They Should Do

Instead of the standard language, computer science departments must expose their students to languages that have content, structure or some other insight of real interest in their design, regardless of how limited their uses might be, he said. "Industry will always need people to do piecemeal work," he added, "but we have to get industry to rethink the ways it attacks problems."

Commenting further on what he called the impending crisis in computer science, Perles noted the growing tendency for universities to have computer centers that are not ready to cope with application problems.

The expertise in that area is growing up "around us, and independent of us," he said, but then suggested that such a development might be inevitable. Computer science is an established part of the U.S. university scene, he said, but – because the discipline is so new – the departments are not now staffed by people trained in computer science.

As that type of staffing takes place over the next five to seven years, the view from the departments will become more and more "from the computer outward" rather than "from the larger world, seeing the computer as one of several possible tools."

Although the administrations are generally "enormously reluctant to take the step," computer science will be available at all universities at the undergraduate level by the late 1970s, and that will pose three levels of concern for the faculties involved.

They will be training non-specialists who want to know something about computers; "terminal" students who will be going out into industry; and candidates for PhDs in computer science.

The first type of student "must be taught how to do something useful, how to solve problems," and must get some grounding in computer concepts. The industry-aimed student must be taught, on the other hand, how the computer relates to the world of action for which he is heading.

For the perhaps reluctant doctoral candidate, the computer scientist has to have some valid explanation of why he or anyone else should dedicate his life to computer science. "We have not done an adequate job of explaining ourselves to other curricula," he mused.

In fact, he noted, the curriculum used or being proposed today is not substantially different than it was five or six years ago. Though that seems a short time span, he said, it would be the same as saying that physics or chemistry curriculum had not changed in the past 50 to 75 years.

Most universities must throw away or drastically revise their computer science curriculum. "If you don't think so, ask yourselves one question," he challenged his audience – "what content – if any – do PhD theses have today?"

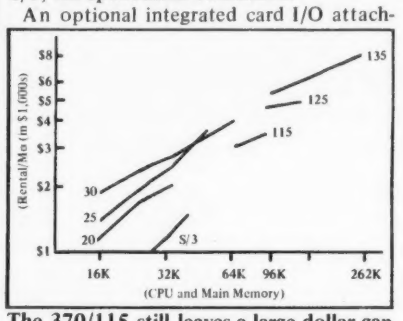
S/3-Compatible 370/115 Arrives With New Disk

(Continued from Page 1)

dissuade users to enter the 370 world, the 115 is designed to handle both 80-column cards and the newer 96-column cards.

The ability to handle 96-column cards allows the 115 to exchange data with an S/3, the spokesman confirmed.

An optional integrated card I/O attachment allows users to attach either the 2560 or 5425 multifunction card unit.



The 370/115 still leaves a large dollar gap for System/3 users if they upgrade to the 370 Series.

An optional byte multiplexer channel lets users attach other IBM peripherals including the 1419 magnetic character reader, 3260 information display system and 3886 optical character reader and communications controllers such as the 3704.

With 32 subchannels, the multiplexer channel has data rates of 29 kchar./sec in burst mode and 19 kchar./sec in byte mode.

A third option allows users to operate the 370/115 with up to six 3410/3411 tape drives.

Software includes Assembler Language and compilers for running several higher-level languages: RPG II, Cobol, Fortran and PL/I.

The 370/115's DOS/VS is designed to require a minimal amount of reprogramming of applications currently running on 360s under DOS, the spokesman said.

Under control of DOS/VS the 115 has a virtual addressing capability up to 16M characters, he related.

The 3340 disk drives can be used with any 370 system.

The new drives achieve a faster seek time and data rate than the larger 3330-series disk drives and can hold nearly 280M characters of on-line data, IBM said.

The 3340 writes more than 1.5M bits of data per square inch, which is twice the recording density of the 3330s and nearly eight times that of 2314s.

Removable data modules are available with 34.9M and 69.8M characters. Storage size can be increased by the user's adding a larger module, much the same as he would change a phonograph record. All modules can fit any 3340 disk drive.

	IBM 3340	IBM 3330	IBM 2314
Average Seek Time (msec)	25	30	60
Average Latency (msec)	10.1	8.3	12.5
Maximum Data Rate (byte/sec)	885K	806K	312K
Capacity (per drive)	34.9M- or 69.8M bytes	100M bytes	29.1M bytes

Operating Specifications of the New 3340 and Older Models

The 370/115 uses a minimum of two and a maximum of four directly attached 3340 drives.

Up to eight drives attach directly to the 370/125. Sixteen 3340s can be attached to the 370/135 and 370/145, while the 370/158 can attach up to 32 drives.

The 3203 printer – which can be attached to the 115 – is offered as an improvement on the older 1403 printer.

Available in two models, the 3203 has speeds of 600- and 1,200 line/min with a 48-character set. Faster speeds are possible with a reduced number of characters.

The new printer has 132 standard print positions with 10 characters printed per inch. Vertical spacing may be either 6- or 8 line/in.

Typical monthly rentals for the 370/115 range from $5,891 (for 65K-byte CPU, card equipment, printer and two disk drives) to $8,115 (for 98K-byte CPU, card equipment, printer, tape drive and two disk drives). Portions of the system – CPU, console and optional multiplexer channel – are available under IBM's recently announced term lease plan.

In essence, this means a user who signs a 48-month lease pays no overtime charges or extra charges above the basic monthly rental.

Purchase price of the Model 115 ranges from $265,165 to $352,115.

First deliveries are set for the beginning of 1974.

The IBM 3340 direct access storage facility may be installed with a selection of three disk drive models – Model A2 provides the first two drives, Model B1 the third or Model B2 the third and fourth.

Under IBM's extended-term plan (ETP), which provides for a 24-month contract period, monthly rental for a four-drive 3340 subsystem will be $1,450. Users with shorter-term needs may use the IBM rental agreement, with a monthly charge of $1,704. Purchase price for the four-drive configuration will be $68,000.

The IBM 3348 data modules are available in two sizes, 34,944,768 and 69,889,536 characters, for monthly ETP rentals of $50 and $70, or for $59 and $82 under the standard rental agreement. Purchase prices are $1,600 and $2,200.

First shipments of the 3340 subsystem for attachment to the 370/125 are scheduled for the fourth quarter of this year and for attachment to other 370s in the first quarter of 1974.

ETP rentals for the two IBM 3203 printer models will be $800 and $1,050. Monthly rental under the standard agreement will be $940 and $1,234. Purchase prices will be $38,000 and $49,000.

First customer shipments of 3203 printer are scheduled for the first quarter of 1974.

And How About Two Cobols?

Special to Computerworld

WASHINGTON, D.C. – The concept of two standard Cobols – one the 1968 current version and the other the new version now being proposed by the Conference on Data Systems Languages and Ansi Committee X3J4 – is gaining some support here.

Last week Robert J. Brown, director of standards for the Computer and Business Equipment Manufacturers Association (Cbema) and secretary of X3, said he was sending the proposal to Ansi for comments, as well as to the subcommittee on the language itself.

"It seems to be a good idea, and it is surprising that no one has formally requested it before," Brown told the Cobol Coordinating Committee which sent in the proposal.

The Cobol Coordinating Committee had urged the current standard be kept in use so the investment in programs and compilers would be protected.

Dental Students Hone Skills

WASHINGTON, D.C. – An experiment in computer-assisted instruction resulted in improved diagnostic skills for a group of dental students at Ohio State University.

Sixteen fourth-year students used teletypewriter terminals, slides and a list of clinical tests and observations in diagnosing the type of pain causing toothache.

After a case history was narrated to the student, he could ask any additional questions of the computer "patient."

Thirteen of the 16 students improved their overall diagnostic skills.

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One Town's Tale

First-Time Government DP User Easy Mark for Vendors

By E. Drake Lundell Jr.
Of the CW Staff

SALEM, Mass. – There is apparently a growing trend among computer makers to "prey on the inexperience of lay people in municipal governments in selling systems."

At least the experience of this town in trying to computerize many of its operations points in that direction, according to deposed DP director Pierre DeGrandpre.

Too often computer manufacturers, he said, oversimplify problems involved with system use or overstate the capabilities of a computer to the lay people who make up the city councils and other governing bodies in local governments.

These people are very well-intentioned, he said, but since they are inexperienced in computer use they can be misled by salesmen as to the capabilities of systems they are considering.

"The manufacturers sell their systems too often through oversimplification," he said. "Then when the system does not work out, everyone in the government is unhappy with the results."

This oversimplification raises the expectations of people in the local governments, he said, noting it is often impossible to fulfill those expectations.

Case History

Salem had an 88K IBM 1130 installed before it even hired a DP director, DeGrandpre said.

The selection committee that advised the town on the systems was made up of local businessmen, whose primary experience was in tab operations, even though one of the three had some computer experience, according to local sources.

What really impressed the city council and administrators within the government was the IBM library of more than 4,000 programs and its promise of expert technical assistance if needed, they added.

The non-technical people on the council, however, did not realize that most of the programs in the library were either in Fortran or RPG and that the town was planning to run a Cobol shop.

In addition, even the programs in Cobol could not be easily fitted to the town's operations without extensive modifications, which were offered by IBM at a fee, the sources said.

At the same time, they noted the "experts" provided to the town were really little more than trainees who required training before they could be used effectively.

The city council was told by the salesman on the account that the system could be up and running with three applications – school applications, payroll, real estate – within three months.

That turned out to be a hopeless task, according to DeGrandpre and other local sources, since the programs in the library could not be easily fitted to the Salem situation.

They also said the task was impossible to complete because the town had no unified data base from which to start and the whole system had to be built from scratch.

To illustrate how lay people can be misled when they are not familiar with computer systems, local sources told of an occasion when a group of local administrators was taken to a local IBM office to see a demonstration of a school-scheduling system running on another 1130.

But either IBM neglected to tell them or the people unfamiliar with computers forgot the demonstration was on an 1130 with 32K of memory, not an 8K machine.

When the same package was run on the Salem machine, it took 40 hours for the first pass alone to be run.

The DP manager recommended getting a larger computer system and prepared specifications to better meet the town's needs for computer power.

At the same time, however, local sources indicated that IBM personnel were suggesting to various people that the problem was not with the equipment but rather with the man running it.

The town then let the DP manager go and issued specifications for a new system. In fact, it issued the old specification once again.

This time, however, IBM failed to bid on the system.

While IBM said it just overlooked the new bidding, local sources felt differently.

"If they rebid the 1130, everyone would ask them why it didn't work the first time like they said it could," DeGrandpre stated.

"And if they bid another system, it would be an admission that they had sold the city a system that couldn't meet its needs the first time and that the problems were with the system and not with me," he added.

Salem has now selected Honeywell to supply its computer needs.

Its first order of business now will be to hire a new DP director – who will once again be a man who had no hand in selecting the equipment to be used.

The 1973 Computer Caravan is coming

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9:00 a.m. . . . . Data Entry
2:30 p.m. . Data Communications Planning

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9:00 a.m. . . . . Data Communications
2:30 p.m. . . . . Software Evaluation Panel

Day 3:
9:00 a.m. . . . . Installation Management
2:30 p.m. . . . . Small Systems Panel

*Entry to the morning sessions is $25 per day, which includes all workshop materials, luncheon, and admission to the Exposition Hall (see pre-registration form on page 20). Afternoon sessions are open to all – free of charge.

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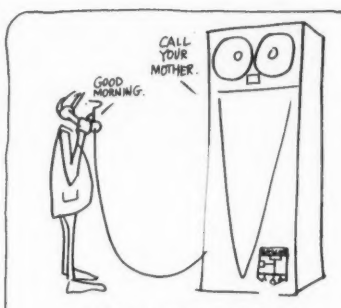

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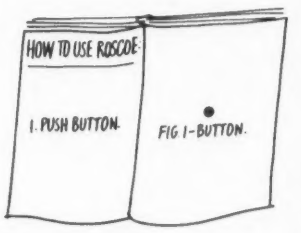

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Vendor Problems Lessened

In-House Testing Affirmed

By E. Drake Lundell Jr.
Of the CW Staff

ATLANTA – One thing data communications users seem to agree on is the need for an in-house testing capability to prevent problems between several vendors in maintaining their systems.

This message was reemphasized here at

Caravan 73: Atlanta

the Computer Caravan/73 sessions on data communications last week.

Bob Kale of Collins and Aikman claimed this in-house analytical ability was one of the major reasons his firm could run a "very successful" data communications network linking 28 plants in 10 states.

In a multivendor installation, he said, the vendors are not interested in particularly finding why a user is having a problem, but are interested only in proving that their equipment is not the cause of the problems.

Therefore, he said, "you need one guy in-house to ride herd" on the various vendors and to isolate the problems in the system so the right vendor's service organization can be called in to fix it.

To isolate the problem the in-house expert needs to know how all of the interfaces work in the system, he said, and he needs to know what happens in the system and the order of events.

In-House Trouble-Shooting

In addition, Kale noted that computer operators themselves could be trained to some extent to be able to isolate the problem areas.

His shop, he said, has developed a procedure manual to be followed by the computer operators to trace the problem area.

Following this procedure, he said, the operators were able to trace faults to lines or modems successfully in almost every case.

This in-house capability is so important, Kale said, users should consider sending members of their staffs to school just to learn how to trouble-shoot their systems.

In addition to the in-house capability to trouble-shoot communications systems, panelists and the audience agreed that a communications user had to continually evaluate his system and equipment in order to make it more effective.

Jim Brown of the First National Bank of Atlanta said his organization was "constantly looking for a better and cheaper way" to operate its network and indicated that about 2% of the data processing budget was spent on this type of planning.

'Applications Determine Systems'

ATLANTA – A user's specific applications – not technology – determine his data entry and communications systems, most users emphasized at the Caravan here.

For example, Vic Davis of the City of Atlanta noted the city had gone to a leased communications network because it had a frequent number of inquiries into the system and many updates.

If the city was able to batch its jobs, however, it probably would have stayed with a dial-up network for its communications needs, he added.

But in the city's particular applications, he said, the time that would have been wasted by people dialing into the system frequently would have made it uneconomical to operate.

Jim Brown of the First National Bank of Atlanta noted that in the bank's statewide operation the cost of physically trucking documents to a central center was greater than the cost of the communication lines used now, so that made the new system feasible, in addition to its increased efficiency.

Richard Trimmer, who led a workshop on intelligent terminals told the users every application was unique to a particular company in some ways and that different systems would have to be used to meet these differing user needs.

Letting Operators Do More Improves Overall Efficiency

ATLANTA – Increasing the responsibility of operators of key-to-disk systems can help a firm improve the quality of its data entry operation, Howard Miller of the First National Bank of Atlanta told a Caravan forum.

CW Photos by E. Drake Lundell Jr.

'smart cookies out there'

"There are a lot of smart cookies out there" in the data entry or keypunch department, Miller told the users, and letting them do more improves the overall efficiency and quality of the work being done.

Miller, who noted that in his shop the lead operators were responsible for doing a lot of programming of the system, said at the same time the user might have to pay the operators a little more as their responsibilities are increased, but he indicated the increased productivity would be worth it.

For example, when an operator is responsible for doing an entire job, Miller said, the operator could edit documents coming in to the shop and therefore catch errors before they were keystroked, a move which could cut the error rate for the shop.

Would-Be Net Users Hurt by Poor Cost Planning

ATLANTA – Computer users planning data communications networks often overlook important cost elements in the planning stages that can later plague them, Gilbert Hoxie of Booz, Allen & Hamilton told users at the Caravan.

Among the areas that need to be considered, Hoxie included equipment costs, personnel costs and a range of "other" costs sometimes overlooked.

Hoxie said the circuit and data terminals costs were the areas over which the user had the most control when planning his network.

He warned the users to be wary of purchasing terminal equipment since the cost of such equipment was dropping rapidly and the user with purchased equipment might find his equipment of little value in a few years because of newer and better offerings.

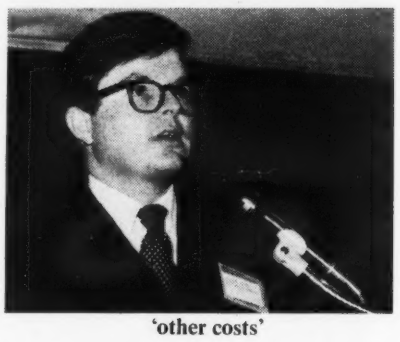
Other costs besides the communications lines and the terminals the user should be aware of when planning the network, Hoxie said, include:

- Modems and DAAs.
- Multiplexers and concentrators.
- Computer interfaces.
- Patch panels and switchboards.
- Data preparation equipment such as keypunches and flexowriters.

. . . On to Houston

ATLANTA – With an estimated 2,000 attendees at the Atlanta Caravan the total attendance for the four Caravans to date is 10,500. Computer Caravan/73 heads for Houston March 20-22.

- Computer simulation and test time.
- Equipment shipping charges.
- Fall-back (duplex) equipment.
- Circuit monitors and hardware test equipment.



'other costs'

- Maintenance charges for the new equipment.
- New magnetic storage requirements.
- Message-processing computer time and memory.

All these factors, Hoxie said, have to be considered when the user decides to go to a communications system, and users usually underestimate the costs of implementing such a system while overestimating the benefits from the planned systems, he noted.

In the personnel area, Hoxie stated that users often overlook the cost of systems design and programming in the development of the project and they also overlook the systems analysis and maintenance programming that will be needed when the system is operational.

Users, he added, also often overlook the costs that would be associated with the project management during the development stage and the on-going facility management costs that would be incurred when the system is installed.

Other personnel costs to be considered include operators for communication computers, data terminal operators, data preparation equipment operators, training, personnel needed for file creation and conversion, post-installation appraisals, control clerks and the personnel time needed for liaison between departments.

In the area of "other" costs that could be expected with communications systems, Hoxie listed badges and embossers; paper supplies and CRT overlays; documentation; modification of existing software or applications programs; and site acquisition.

Other unexpected costs might include electrical and air-conditioning costs; auditing services for the new system; transportation for personnel to maintain liaison between departments; and non-system communications costs.

Hoxie told the users they should try to get equipment and packages that were available off-the-shelf instead of doing their own development work since in-house development was usually more expensive.

Only users with very special requirements should do their own development, he said.

In the area of non-technical and non-cost considerations Hoxie said the user should be aware of all the implications of installing a data communications system.

For example, he said, in some applications data transmission systems could not take the place of paper documents because of legal requirements, such as in stock certificates and bank records.

If the user configures his own system, he said, he must be sure to know who will be liable for errors. If an error is caused by a particular piece of equipment, is that manufacturer responsible, or is the user? he asked.

Outside Software Offers Challenge

ATLANTA – "One of the real tests of a programming manager is the ability to control the cost and progress of a project that is handled outside his organization," according to Jack Grantham, systems officer at Trust Company Bank.

Speaking at a Caravan session on software evaluation, Grantham said there were generally two reasons for a firm to go outside for software help.

First, he said, it may need to buy expertise unavailable in-house, but his firm rarely did that unless "we can arrange for them to leave some of their expertise behind with our staff."

A more common reason, he said, is to better utilize manpower in order to meet tight schedules on a project or to get a proprietary product or service.

In addition, he said, outside contractors should be used to help the company at peak load times as opposed to increasing the in-house staff. His firm, he said, "prefers to increase staff if prospective work load justifies it, but only if."

Users should always be careful when it comes time for contract negotiations

The potential buyer of software should always consult with his lawyer and every party to the contract should be sure of the product and the scope of work expected under the agreement before it is signed.

It is important to evaluate the prospective vendor, he said, noting that 80% to 90% of the vendors his firm has done business with, or the individual directly involved with the firm's work, had either gone bankrupt or left the area during or "just after our work."

Affair to Remember

Atlanta Mayor Sam Massell cuts the "ribbon" of computer tape to open the Caravan. Flanking the mayor are Leo Bowser, Caravan manager; Dottie Travis, sales and marketing administrator; and Robert Rankin, general manager.

Ban Close on Storage of Intelligence Data

(Continued from Page 1)

tion campaign to prevent intelligence data from being placed in the state's crime computer and said such information should not be housed in any local crime computer in the state.

Most importantly, the Iowa legislation would:

- Prevent intelligence data of any kind from being placed in any crime computer in Iowa, including those operated by local police departments.
- Allow any citizen to inspect for accuracy criminal-history information that refers to him in the files of the state police. That same right is not, however, assured for information kept by local police departments.
- Allow police to disclose criminal-history information (limited to factual arrest, court or corrections data) only to other criminal justice agencies or to other government agencies authorized to receive the information by a Confidential Records Council, which the act creates.
- Allow manual intelligence reports (defined as any unsubstantiated file of a police investigation) to be disclosed only to peace officers, criminal justice agencies or to state and federal regulatory agencies. This would exclude any local government agency, such as city councils, not involved in law enforcement work.

If a government official releases crime data to someone unauthorized to receive it, or otherwise misuses the data, he is liable for both civil and criminal penalties under the bill.

If an individual has been acquitted or the charges against him have been dismissed, police are forbidden to keep a record of the charge in any crime computer.

Minor charges against juveniles may no longer be retained as permanent records under the proposed legislation. They may be retained only if the charge would be considered either an indictable misdemeanor or felony if committed by an adult.

If a peace officer detains an individual and decides to perform a computer check to determine whether the individual has a criminal record, the officer must inform the citizen a check is being made.

The bill also calls for a nine-person Confidential Records Council – including two private citizens, four legislators, a district court judge, a local police officer and the state public safety commissioner – to monitor the operation of government information systems, review complaints from the public and review regulations for dissemination of crime data drawn up by the state Public Safety Department.

The records council also has authority to review all agreements for exchanging Iowa's computerized crime data with government agencies.

The state computer system already has a temporary NCIC link with the FBI for testing purposes and state officials will apply for a permanent link later this year. Within several weeks, wanted persons and stolen property files are expected to be on-line.

While it is designed to house crime and traffic records, the system is also slated to be connected to such agencies as the Iowa Revenue Department, the Highway Commission, the Department of Public Instruction, the Department of Social Services, county treasurers and recorders and many others.

The computerized records of these agencies are not covered in the bill passed by the Iowa Senate.

While State Sen. Gene Glenn hailed the bill as "a milestone in the protection of confidential criminal records of citizens," the legislation drew attacks from other sectors of the state.

Senator Gene Kennedy, a former Iowa Highway Patrol trooper, charged: "There seems to be some anti-cop legislation in the air." And he warned his Senate colleagues not to "legislate out of fear that you will be accused of limiting individual rights."

Some senators also warned that because the legislation prohibits intelligence data from being placed in any crime computer in Iowa, it conceivably could prohibit the FBI or the CIA from computerizing intelligence data within the state.

GAO Criticizes Reporting of FBI CCH Exchange System

(Continued from Page 1)

or rap sheets between the states and the Federal Government. These rap sheets contain information on arrests for felonies and whether the person was found guilty, found innocent or whether the charges were dismissed.

Under Project Search guidelines, information on criminals was to be kept in a state computer with only an index of the person's name stored at the national level unless he had committed crimes in several states or violated federal laws.

National Data Base

However, the GAO report indicated, the FBI is now keeping all of the records in a national data base here, even though it said it would like to follow the Search guidelines.

Under the system, local police forces and other agencies are supposed to report arrests and their dispositions to one central computer in each state which will be able to communicate that information to the national FBI-run system.

GAO found, howwever, that at present only 24 states have laws requiring local agencies to report arrest and dispositions to a central identification unit.

In fact, it found that "only four states had achieved more than 90% reporting for both arrests and dispositions which means that, in each of these four states, over 90% of the arrests and over 90% of the dispositions were reported" to the central location.

Poor Reporting?

Critics have complained that the information in the system is often incomplete, a fact which seems supported by the GAO report. In some cases, the critics have noted, a person has been reported as having been arrested without any further information included about the case, even after he has been found not guilty or the charges have been dismissed.

"Until such reporting is improved, the exchange cannot be fully effective," GAO said. "System users must be certain they are aware of all of an offender's prior arrests and their dispositions," it added.

"The value of the system to law enforcement or court officials will be diminished if they cannot rely on the completeness of the records they are using," GAO added.

Current LEAA and FBI plans to make the system more efficient, GAO said, are really not solutions to the problems with the systems because they "will not insure that the file is accurate or complete at all times and will have no effect on preventing dissemination of information on an arrest for which a disposition has not been obtained.

Nets Treated Like Toys: Davis

Special to Computerworld

SAN FRANCISCO – DPers must stop treating computer networks as technological Tinkertoys and should get down to the business of making networks serve the users, Dr. Ruth M. Davis of the National Bureau of Standards told a Compcon 73 Conference here.

In her keynote speech on "Computing Networks: a Powerful National Force," Davis also told the IEEE Computer Society's annual three-day conference that DPers must not wait for the government to provide policy leadership. Instead, she advocated that the computer industry and users act in the general interest to identify and resolve policy issues.

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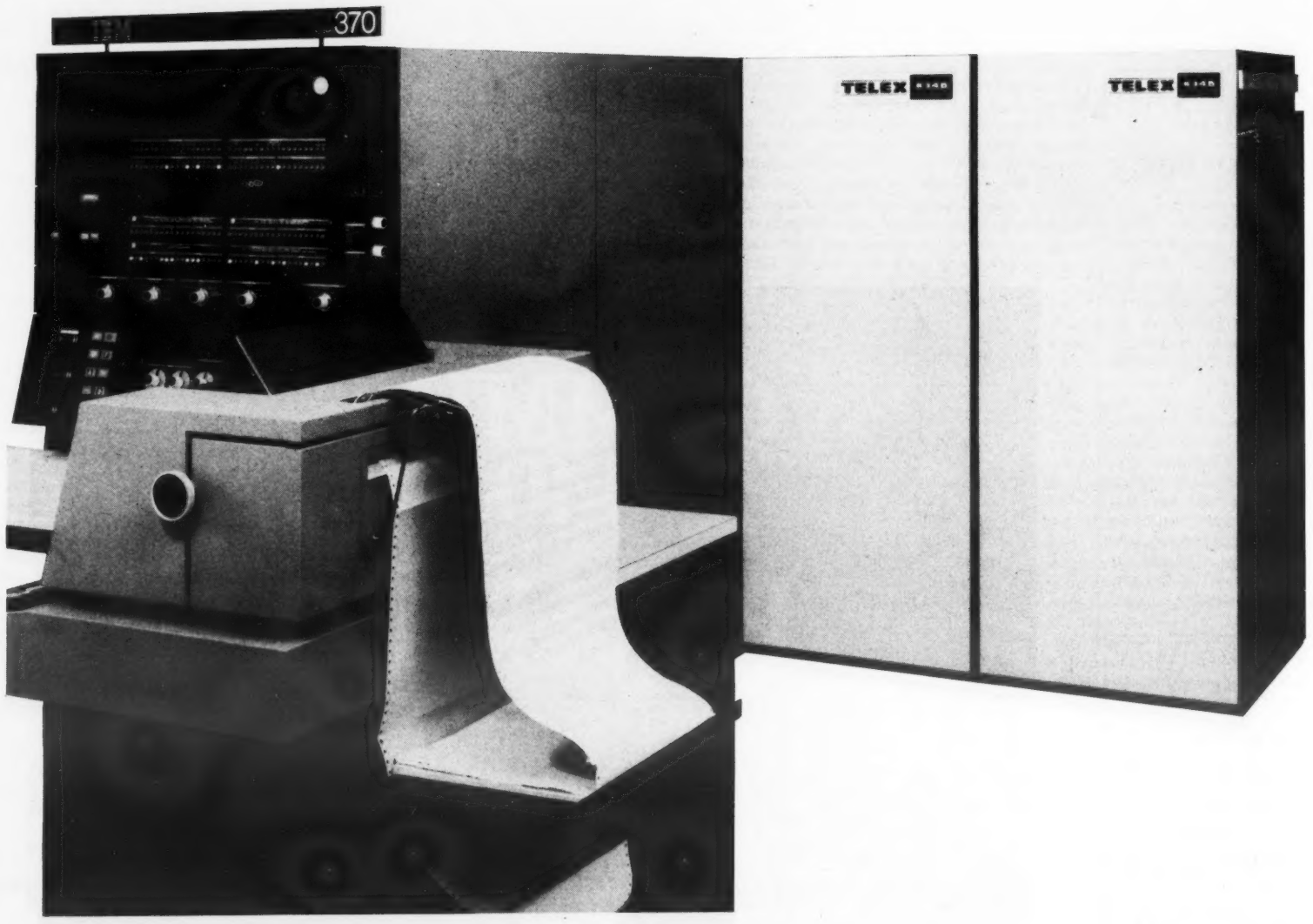

TELEX 6360 and 6345 Memory Subsystems For System 370 combine lower pricing with compatible performance, offline diagnostics and software transparency.

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House Inaugurates Bill Status System, Wider DP Use Urged

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – The House of Representatives recently launched a major new computer-based information service – the Bill Status System – making it the most computerized national legislature in the world, according to Rep. Wayne Hays (D-Ohio).

The Bill Status System gives congressmen and senators, as well as the general public, instant access to the status of each of the more than 25,000 bills introduced each year in Congress, according to Hays. Hays heads the Committee on House Administration which runs the new system as well as the computer-based vote-counting system used in the House.

A bill may go through as many as 118 steps after it is introduced in Congress, Hays noted, where it is either rejected, passed or just forgotten.

Each day there are between 1,500 and 4,500 requests for information about the status of specific pieces of legislation, coming from congressmen, constituents, federal agencies or the press, he noted.

Previously, a group of clerks had to follow up on each of these requests manually and the results of their searches were not always accurate due to delays in reporting on various actions that might have been taken on the measures.

Now eight clerks can communicate with the House's leased (from Federal Data Systems) IBM 360/50 computer through Four-Phase Systems terminals and can answer telephone requests for such information on bills almost instantaneously.

Computers In Government

All the caller has to know is either the number of the bill, the sponsor of the bill, the subject matter of the bill or the committee to which the bill was referred to get up-to-date information on what action has been taken on the measure.

If the caller wants further information, he can be supplied with a hard-copy printout of the actions on the bill from the system's four Univac DCT-500 printers.

"This bill status system will be a great aid in the legislative process," Hays said, adding that "it will save money and man-hours" over the previous manual system.

The equipment costs the House around $22,800/yr in rentals, he noted, and the salaries for the operators are around $72,000 for a total of almost $95,000 for the new system. The old manual search method cost about $125,000 yearly, he noted.

"However," Hays said, "the speed and accuracy of the new system is more important" than the cost reduction.

Wider Use Urged

Even though the House is the most computerized national legislature in the world, Hays said, he is urging the Congress to employ computers even more widely than it does today to help in analyzing the great amount of data sent up every year by the Executive Branch.

Presently the Bill Status System, which can be reached by calling 202-225-1772, is only operated on a phone basis or by direct request to the computer center in the House.

However, Hays noted, it probably will be expanded to include terminals in every committee room in the Congress and in the office of every member of Congress.

The system was developed by the House's internal data processing staff, headed by Frank Ryan. He estimated the system cost $200,000 to develop overall, but noted that this in-house effort was cheaper than it would have been to have an outside contractor develop the system.

'Keeping Up With the President'

WASHINGTON, D.C. – The score presently reads 6,000 to 3.

Those figures reflect the imbalance between the computer power of the Executive Branch of government and the Congress – and some congressmen think something should be done about it.

Congress needs more computers of its own, according to Wayne Hays (D-Ohio), so it will have a data collection and analysis ability equal to that of the Executive Branch.

The Executive Branch, he said, does not allow Congress or individual congressmen to tap into its computers and only feeds Congress the data it wants to give out – usually data that makes Executive proposals look good.

Hays said at present there are more than 6,000 computers installed in one area or another of the Executive Branch, but Congress only has one large-scale system and two smaller computers.

Presently, he said, his Committee on House Administration is giving "highest priority" to the development of a bill analysis system that would give the Congress the capability to analyze the effects and costs of various pieces of legislation before they are passed into law.

In addition, he indicated, Congress needs computer systems capable of doing budgetary analysis so Congress will not be so dependent on the Executive Branch for its data on the effect of budgetary cutbacks or realignments.

Dial-a-Bill on N.Y. Legislative 'Hot Line'

By Peggy Zientara
Of the CW Staff

ALBANY, N.Y. – A state Senate information "hot line" here is keeping the New York public informed of just what's happening up at the State House.

A toll-free number, dialable from any place in the state, will connect the caller with an information source concerning the status of any bill before either house of the legislature.

Brief History

When a computer is fed the number of the Senate of Assembly bill, a CRT displays the name of the legislator who introduced the bill, what law the bill amends or affects and a brief description of what it does. Then the bill's status is shown – whether it is still in committee, on the floor or has passed or been defeated.

All this information is available momentarily only when the bill number is provided. Otherwise, the process may take hours or even days, while someone researches the Legislative Index, which lists the 15,000 bills introduced each year.

At the height of the legislative session, the system may handle as many as 200 calls a day.

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'Bug' Squashes Football Team's Championship Hopes

By Ken Shonk
Of the CW Staff

HANNIBAL, Ohio – A post-season cruncher, thrown by a programming "bug," dropped the Hannibal River High School football team from first to third in its region and sat the 10-0-0 team on the sidelines in Ohio's first year of tournaments.

When the "bug" was found two months later in the computer program used by the Ohio High School Athletic Association (OHSAA) to generate the point ranking of each team in the state, the OHSAA named Hannibal River the winner in Region 7 and publicly apologized, but the tournament games had already been played.

Hannibal River had led the region for seven weeks prior to the final game, so the quick drop was a shock.

As Coach Martin Flannery, who retired at the end of the 1972 season after 24 years, said, "I felt worse when I learned of the error than I did when we missed the post-season games. I felt cheated. I could never forgive the computer company which did the work for the OHSAA, but, of course, they have never apologized."

"Of course the error upset us too," said Commissioner Harold Meyer of the OHSAA, "but under the system of point accumulation used, a drop is theoretically possible even when a team wins a game.

Error Suggested

When school officials first learned of the drop in the standings, they met with Meyer to suggest an error. But according to Coach Flannery, Meyer told them, "These standings are final. If you have any doubts, you go back home and prove us wrong."

So Hannibal River booster club president Stan Bonar, an accountant with some computer training, pinpointed the simple mathematical oversight after two months of manually checking the calculations.

The ratings are based on a 10-game schedule, explained Bonar. "If a team played less than a 10-game schedule, the computer was to project to a 10-game schedule, dividing the total points by the number of games played and then multiplying by 10. However, the computer program only made allowances for one game under 10. If you played eight games, the program still divided by nine. Since our team played two out-of-state games which counted as open dates, the error penalized us."

"The system had been tested for two years," noted Meyer, "and last year both the system and the program were tested, and no one complained about the ratings they received. We just didn't expect any bugs to show up."

However, Bonar suggested, "since no tournament games were played until this year, no one had a stake in finding an error. If some manually worked examples had been checked against the computer, I suspect the error would have shown up."

"We feel extremely sorry about the error, especially in the first year of the tournaments," said Bill Fouss, a spokesman for National Scanning, the Columbus firm that did the computer work. "We went through two years of dry run testing and so an error was naturally unexpected.

Of course, the group hardest hit by the error was the team which was ready to suit up and tee off for a postseason game anyway. Only this time, guard Eric Brubaker indicated, the team wanted to send its front line through the computer room.

"The fans felt just like the team," he said. Presumably, the cheerleading section was ready with a new yell, "Kick that disk, block that drive, punch that tape, blitz the programmers."

Users Agree: Contract Proviso Can Eliminate Mixed-Vendor Hassles

NEW YORK – Users at a Caravan/73 data communications panel proposed an answer to the question: "How do users setting up a communications network stop the various equipment suppliers from pointing at one another when trouble arises?"

The suggested solution is to incorporate into all contracts a clause which states that if any vendor claims problems are caused by another vendor's equipment, his recommendation will be followed, but with the following proviso:

If the trouble is eventually traced to the first vendor's equipment, he must pay all expenses incurred to resolve the problem.

For example, if a modem manufacturer stated emphatically that a user's problems were caused by the front-end processor company, the user would accept this contention, and call in experts from the processor company to correct the alleged problem.

If the processor personnel were able to prove the problems really were with the modem, the modem manufacturer – who initially claimed innocence – must fix his modem and reimburse the user for all expenses incurred through his erroneous first judgment.

Personnel Contracts Aid Career Growth

NEW YORK – Personnel promotions should be treated as formal contractual agreements, according to Robert King of Mobil Oil Corp.

In the contract concept, the company gives the promoted employee more money and other considerations in return for the employee's taking more responsibility.

These responsibilities should be written out, according to King, to alleviate any possibility of future misunderstandings.

If a company employs the contract approach it will be able to develop a ladder for career paths, he said.

In developing the career paths, King told a Caravan/73 workshop on installation management, users should note that good technical people do not always make good management personnel.

To avoid the dangers of invoking the Peter Principle – people rising to the level of their incompetence – companies should develop a career ladder for technical people that does not always lead to an administrative or management position.

The programming staff is usually broken up into application areas, each with its own responsibility and dependent on the other groups. While this modularity helps the company plan and control its work product, the possibility exists that it may work to alienate programmers.

King's response to this problem is to provide a defined path for programmers and to rotate them so they can build enough experience to move up.

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Editorials

Reality, Not Just Data

The recent IBM advertising campaign has attracted more attention than any prestige-type corporate advertising we can recall since the time the then Esso Corp. started stuffing "tigers" into people's tanks. At least, that is, it has among our readers.

Whether or not it has impressed its meaning upon any high executive able to decide in IBM's favor, we do not know. Our interest is more in why our readers have shown this interest.

There appear two theories accounting for this interest. A quick look suggests that IBM, which for years has outproduced everyone with manuals, exhibits and other data during computer selections, is now finding pure volume of data does not always support its case.

Therefore, the argument runs, the appeal to reality as being somewhat different from data introduces another alternative to IBM arguments. This meaning can then be used in the cases where the data is against IBM.

The other theory that accounts for the advertising's attractivenesss to data processors is that it brings out a previously hidden truth many users have subconsciously felt, but have never been able to put into words as effectively as IBM's advertising agency.

According to this viewpoint, the attractiveness comes from the fact that the slogans pinpoint a great weakness in data processing – that data, no matter how well processed, remains just data. Its relationship to reality is still questionable.

We are inclined to believe the latter theory.

Here, in fact, we may have the hint which can make data processing a profession – the profession of people dedicated to ensuring that data presented by them shall reflect reality. That would certainly be a worthy goal.

Computerworld, therefore, commends the IBM slogan, and suggests to all the various professional societies that they take a good look at the implications involved in IBM's distinction between data and reality.

Living With a Problem

(see adjoining letter to editor)

Dear Mr. D'Unger:

I recently came across your cri de coeur for the hundreds of thousands who, like yourself, try to get their names spelled correctly in computer applications. Your case is, of course, somewhat special, as you will undoubtedly agree – perhaps even more special than your other colleagues in misfortune.

Yet, the remedy, we suspect, must be in your hands. Apostrophes do not belong in English names – and most of our business programming is done in English language systems like Cobol. Cobol programmers become leery of apostrophes, also – although in general there is no true reason for them to do so in this case.

The real problem is in sorting routines. You simply would not like, we suspect, to be found among the "Us," with no mention of the "D" left. You don't like being found among the "Ds" at "DU." But who would ever find you at "D'U" in either the "Us" or the "Ds?" Where would "D'U" fall? And how would we program our systems to get you there anyway?

Half the time your name would appear with a space on one side or other of the apostrophe, and the other half it would appear with no space at all involved. The result would be absolute chaos.

It would be nice if something else was really practical, and perhaps one of our readers has a more constructive suggestion for you. Unless they do, however, we suggest you channel your efforts into living with the problem, rather than fighting for the right to be different.

Au revoir, mon brave,
A poor English-speaking computer

'Sorry, But I'll Have to Take Your Weapon...

Letters to the Editor

Identity Crisis Concerns Name

I have a complaint regarding computers. It appears to me that the matter regarding proper names could be a serious legal one.

My name is Robert M. D'Unger, and in the use of computers it appears as "ROBERT M DUNGER" or "ROBERT M D UNGER," each of which is incorrect; and the reason given me regarding this is that there is no provision for an apostrophe in the computer system. (Yet, I believe that a decimal point is used involving figures.)

With thousands of names in which an apostrophe is part of the spelling of the name, it seems inconceivable that an omission such as this is legally acceptable. Is it possible to obtain some explanation as to why this cannot be corrected?

Robert M. D'Unger
Arlington, Mass.

See editorial. Ed.

IBM Thrives on Competition

The letter from Johnnie Jackson, chief of data processing, Walter Reed Army Medical Center [CW, Feb. 28] was ridiculous. To say that IBM should be protected by legislation from "parasitic competition" is really the height of naivete.

IBM has been responsive to the customer both service- and price-wise only because of the "parasites." Several years ago, an IBM 2420-VII tape drive rented for $1,020/mo and there was no such thing as a fixed-term plan with reduced rates. When other manufacturers began to give IBM serious competition, they were forced to offer a better tape drive (the 3420) and at a much lower price. The same thing happened with many other types of equipment.

Each IBM development has been in response to healthy competition in the industry. Competition is what keeps corporations honest, not their inherent feelings of goodness toward mankind.

Jackson's letter was especially distressing since he is a representative of the U.S. Government. As a taxpayer, I resent his attitude toward an industry that saves the government millions of dollars a year. I hope his attitude reflects only his personal bias, and not that of the U.S. Army.

Sharon K. Ray
College Park, Md.

QTRAN a Helpful Program

The Feb. 21 issue contains an article by Miles Benson concerning a project and/or program called QTRAN. The third paragraph from the end of the article concludes that "QTRAN was, quite simply, worthless."

Let it be known that there actually exists a program called QTRAN, a concise description of which appeared in 1966 in a book published by UCLA entitled *"A Study of the Aviation Mechanics Occupation."*

QTRAN was the basis of the program used to analyze the input and prepare the output for the report produced by this study.

An extended version of QTRAN proved to be quite valuable in our effort to translate programs from one machine language to another.

E.W. Banhagel
Los Angeles, Calif.

For obvious reasons and with all good intentions the article chose to disguise the real name of the program. As fate would have it, it is truly a small world. Our apologies. Ed.

Sensibly Speaking, IMS Was Right

Regarding the article, "Accounting System Growth Monitored by Manager Pairs," [CW, Feb. 28], I would like to clarify my statement that I did not think IMS was the best technique for the current operation.

The accounting system did not in and of itself necessarily justify IMS, but because of future plans for systems that would depend heavily on IMS and interface with the accounting system, it made a great deal of sense to use IMS right from the start. This would then save Notre Dame a great deal of time and expense on interface later on.

James F. Donnelly
Systems Manager
Keane Associates
Wellesley Hills, Mass.

Setting the Record Straight

Thank you for all the nice things you said about the Corporate Shareholder System package at Bendix in the Feb. 28 Special Report. However, I think we won the battle but lost the war.

The system is the PMI Corporate Shareholder System (CSS) now installed in over 70 installations. The rights and responsibility for this system rest with Programming Methods, and not with our close associate, Stockholder Systems, Inc., as indicated.

Edward Opengart
Senior Vice-President
Programming Methods
Division of GTE Information Systems
New York, N.Y.

Stockholder Systems, Inc. continues to service Bendix and several other CSS package users, on behalf of Programming Methods which acquired marketing responsibility for the package after MSA, the original vendor, went bankrupt.

Bendix's Jack Patterson also noted that the payroll system his company uses was acquired from Computer Sciences Corp., not MSA as he first reported. Ed.

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. *Computerworld* reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

...By Any Other Name

Can 360 Become a 370? DAT Box, Add-Ons Say Yes

The Taylor Report
By
Alan Taylor, CDP

Much work has been done recently on determining the impact of the 370s, and in particular the impact of the new virtual storage systems.

Unfortunately, however, very little consideration has been given to a very basic question – Just what is a 370? I know it may sound silly, but then so do a number of items about computers.

Computers are like nothing else when it comes to classifying their value, a problem many of us have to face daily. Certainly we have to face it when the auditors come around.

The fact is, labels put upon computer systems are quite arbitrary. Not long ago there was one computer sold under different names by both Control Data and NCR.

The manufacturers often change one computer into another one. They call it upgrading – if they let the user know about it. Privately, it is called "hobbling," when the new computer is really the same one with a few wires disconnected, or "salvaging" when the item is reconfigured.

The term is unimportant. The fact is, computer hardware is capable of being changed from one machine into another.

In the old days, when the alchemists went looking for a "philospher's stone" that would change lead into gold they called it transmutation. We still refer to transmutation when one element is changed into another. But few of us realize that computers, as well as elements, can be transmuted.

Clearly, if computers can be transmuted, any study regarding 360s and 370s should be considered in the light of the definition of a 370, and whether 360s or any other systems can be "transmuted" into 370s.

Such machines have been transmuted and have been quite successful. Last year IBM claimed such systems could not be maintained, but history (which I have checked) has shown that once again IBM's technical experts were wrong.

Already machines such as the CHCS accelerated Model 30s are now running Operating System programs at rates only a few percentage points below the throughput of the Model 40.

This makes it rather incorrect to label them "Model 30s." A little bit more and they will be – in users' eyes – Model 40s.

It is becoming clear that 360 computers – like some elements – *can* be transmuted.

So much for the 360 question. Now we face a similar question as to what a 370 really is.

Possible Approaches

There are a number of ways the question can be approached. For instance, it can be approached from the technicalities of 370 engineering, the characteristics of the different models, the memories, etc.

From an engineering point of view, 370s can be regarded as enriched reconfigurations of 360 hardware. The use of the M-9 memories from the 360s in some 370s, albeit with an improved control system, is an example of this type of process.

Yet, from the users' point of view, this does not seem very relevant. Recent surveys indicate users first decide on the performance characteristics they want in their own installations, and then look around to find out where they can obtain them.

If they like a 370 characteristic, it will be related to a 370 performance characteristic, not an engineering characteristic. So it is 370-style performance, from the eyes of the users, that will determine the answer to the question of the real nature of a 370.

It is generally admitted that users, at least until last August, looked at the 370 as simply a speeded-up version of the 360. The performance characteristics were the same. There was no particular attraction for the 370 system, as such, that could not be obtained by adding additional memory on the 360s, through third-party leasing, etc.

360 Users Happy

Many 360 users did in fact do this, and in a recent market research report 360 users said they felt they were ahead of users of unliberated 370s as far as price/performance is concerned. Until August, then, there was no doubt that the liberated 360s from the leasing companies were still going to be an effective part of our computer resources.

After last August, however, the nature of the 370 performance changed somewhat. Virtual storage, of course, is an old effort, but now IBM offers it clear and loud instead of in the quiet way it has been doing since 1965. The virtual 370s even have software.

One thing the new virtual 158 and 168 systems do not have, however, is any official performance figures. The instruction times of the 158 and 168 were still not available last month, some six months after IBM started selling them.

One result of this is that accountants who use the computer reports distributed through the American Institute of Certified Public Accountants in order to evaluate computer inventories find asterisks where performance figures should be, together with a vague extract of an IBM press release.

Virtual systems, the editors of the computer reports commented, often result in increases in hardware costs and degradation in performance.

Computer EKG, of Cleveland, Ohio, measured the virtual storage performance of the 370/147 systems in December 1972. In the notes of the engineer who performed the tests I find a comment that the problem state was approximately doubled when the dynamic address translation (DAT) was in full operation. (See chart) This is certainly important taken in conjunction with the long delay in announcing the timings of the 158s and 168s.

It now looks as though the key characteristic of the new 370 – its ability to use virtual systems – can in many cases effectively nullify the very performance improvements originally offered by the 370 system's internal speed.

As a result, the price/performance situation remains very much where it was before the virtual systems were announced and, if anything, has moved in favor of the 360s.

Performance, Price/Performance

This would greatly help the leasing companies, except for another often overlooked point. Although it is customary to believe that computer procurements are handled on a "price/performance" basis, this is not true. In fact, they are handled on a "performance, price/performance" basis.

The first thing the user wants his computer to do is run the programs he wants, when he wants. That is his idea of performance. Only after this prerequisite has been satisfied does price enter into the picture.

The new 370s do have some performance characteristics that the old 360s do not have. This can be important. For instance, the new 370s will have the capability of running the virtual operating system, and mixes of programs that require virtual operation.

But it is also possible that the liberated 360s may get this capability. I hear it is now possible to have Dynamic Address Translation boxes (the keystone of virtual memory operations) added to 360s.

We already know the 360's internal performance can be drastically improved. We also know there is little difficulty in adding the few additional 370 instructions necessary to run user programs.

So what do we have when a 360 system has been modified so it has the same characteristics as the 370?

As far as I can see, we have a 360 transmuted into a genuine 370. In fact, we may have a 370 that is superior to the IBM offering, because the transmuted 360 is open to still further improvements – at reasonable cost.

And I am not alone in this view. I was recently talking to the president of a large computer market survey firm. In discussing a study on users' reactions to 360s and 370s he pointed to the fact – which really initiated this article – that something that runs 370 programs is a 370. A really updated 360, he said, is therefore really a 370.

Computers – unlike lead – can be transmuted. How should auditors evaluate the DP philosopher's stone?

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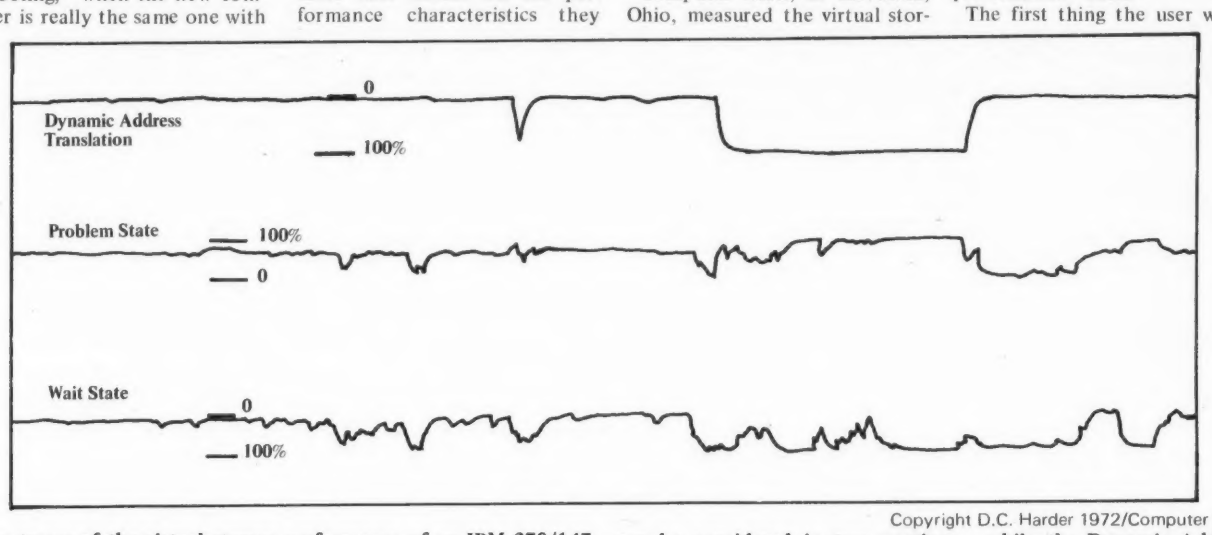

Copyright D.C. Harder 1972/Computer EKG

These traces of the virtual storage performance of an IBM 370/147 were obtained in December 1972 as part of a larger study by Donald C. Harder of Computer EKG, Cleveland, Ohio. The six-hour traces can be considered in two portions – while the Dynamic Address Translation is in operation (the third quarter of each trace) and while it is not.

Letters to the Editor

'Parasitic Competition' Is Free Enterprise

Re: Johnnie Jackson's letter [CW, Feb. 28]. Jackson does not understand the American free-enterprise system. What he calls "parasitic competition" on the part of independent manufacturers of IBM plug-compatible equipment and third-party lessors is a logical outgrowth of that system.

Competition in a free marketplace is the basic and major force behind technological advancement; the major beneficiary of such competition is the end user who gets a more powerful, versatile product at a lower cost.

As such, competition should not be hindered by legislation as Jackson suggests. Instead, the Justice Department should pursue that course of action which ensures free competition – which is exactly what it is doing.

Stuart D. Abramson
Applications Analyst
Control Data Corp.
Dayton, Ohio

Users Foot the Bill

How can Johnnie Jackson rationalize that, when the buyer has paid IBM its *full asking price* for a system once, the buyer has "provided none of the effort that goes with the manufacturing of a computer." Presumably, Jackson intends manufacturing to include the "researching, designing, developing and marketing of these sophisticated systems." Who but the buyers provide the funds for "manufacturing," etc.?

If Jackson is such a sympathetic person, I suggest that sympathy be expended on those other mainframe competitors of IBM who must perform these same functions ("researching . . . ") also at great cost.

None of these competitors was able to capture as much as 10% of IBM's total without acquiring another major competitor's base.

Should the Department of Justice protect IBM from "parasitic competition?" IBM, when it notices the pinprick of the competition, lashes out and effectively squashes it.

And who pays the bill for this success? You, Jackson, and tens of thousands of other users who pay the premium IBM can command because of its effective market monopoly.

Leo J. Higgins
President
Computer Industry
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Minneapolis, Minn.

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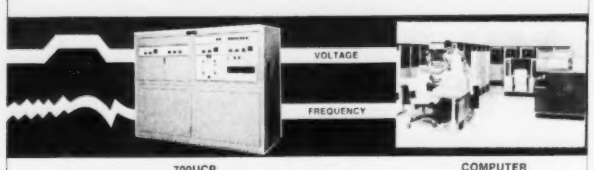

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The Professional's Viewpoint

Which Society Should DPer Join?

By Chris Coddington
Special to Computerworld

I am a programmer analyst maintaining a Cobol compiler for a major computer manufacturer and a CDP holder. I am a member of the DPMA and have been for many years. But there are a number of different organizations, each having essentially the same goal and all aimed at recruiting the same individual.

This is presenting myself and other professionals with a problem as to which we should join. I do not want to be the type of person who joins everything in sight and is then the chronic non-participating member. Where do I belong?

I don't know, but being an analyst, I have analyzed the situation. Here is my analysis giving the pros and cons of each society from my point of view.

- Data Processing Management Association (DPMA) – The leader by age. It has an excellent magazine, but DPMA has high dues, and is not progressive in professionalizing the industry.
- Association of Computer Programmers and Analysts (Acpa) – Could be a good place for me. I program and work extensively with programmers and analysts. But I don't see Acpa doing a lot.
- Society of Certified Data Processors (SCDP) – This should be the place for me. I hold the CDP and the SCDP certainly is active, and it is concerned with professionalism. But, it is only a side-kick to DPMA. The SCDPers should have worked with DPMA when they felt DPMA did not serve the needs of the CDP holder.
- Society of Professional Data Processors (SPDP) – Much the same regarding the SPDP as the SCDP. It is also active and interested in professionalism. However, it exists only because its members could not be members of the SCDP.
- Society of Data Educators (SDE). – The SDE might feel I should join it. I do teach occasionally and am involved in data processing education. But, frankly, I don't find myself interested in it.
- Association for Computing Machinery (ACM) – ACM ranks in age with DPMA. But it also has not been progressive with professionalism and has high dues.

So where do I stand? The analysis does not give me an answer at all. True, it shows that both SCDP and SPDP are interesting to me. However, they will not get my money until they get together. Then I might join and help them be an effective force for improving DPMA and becoming a part of DPMA.

Frankly, that is what I urge. In the interests of the profession, I think Alan Taylor, CW's columnist, could be an important force in accomplishing that end. But in the past, I have been amazed that Taylor has never seen fit to question the credibility gap involved in the existence of so many societies, although he strikes hard at the problem. But he just discusses it, and then totally fails to stick his neck out and say it.

So now I have said it.

Chris Coddington is vice-president and membership chairman for the San Gabriel Valley Chapter of the DPMA.

Letters to the Editor

CP-V Operating System Is Superset of UTS

The recent article [CW, Feb. 21] on CP-V, the new Xerox virtual memory operating system, contained several errors.

The article compares UTS to the IBM DOS/360, and states, "There will be no further development of UTS." The fact is, as the Xerox news release noted, "CP-V is an outgrowth of UTS – a field-proven operating system that not only met all of its original design objectives but, in fact, exceeded its objectives in a number of areas."

Thus, CP-V could be accurately described as a superset of UTS. All programs which have been developed by the numerous installations which now utilize UTS can, as a consequence, be run without change on CP-V.

The article further states that "maintenance of UTS – and XOS as well – should continue to be available as needed and without cost." In fact, because UTS and XOS have been replaced by CP-V, they will no longer be supported products.

However, because CP-V is a follow-on to UTS, customers now employing these programs will be furnished CP-V without cost.

Jerry Packer
CP-V Product Manager
Xerox Corp.
El Segundo, Calif.

RPG II Users Should Form Own Society

Here's another vote for RPG II for DOS [CW, Feb. 7].

How many times have you seen a Cobol programmer struggling with his FDs (we won't even mention the effect of packed fields), while the RPG II programmer has already completed several programs of similar complexity?

In addition to the OPEN and CLOSE verbs so desperately needed, what about communications? Why doesn't IBM implement the same facilities available to System/3 users for us DOS guys? Even products such as CICS do not recognize the sophistication of IBM's simplest compiler.

The professional societies are no better. Being a member of DPMA and Common, I'm consistently disappointed by their lack of endorsement of a language as efficient and easy to use as RPG.

RPG II users should band together and form their own society since no one else seems interested.

E. J. Krayer
DP Manager
New England Petroleum
New York, N.Y.

Some DP Uses Cruel

Anyone who watches TV or reads the newspapers knows the cruelty and suffering to animals caused by the fur business. Now, in the Feb. 28 issue of *Computerworld* we are told that the Fouke Co. is using a computer to make its sealskin business more efficient.

I am sorry to learn that the computer, which has the potential for doing so much good, is being used in such a barbaric business.

David W. Adams
Los Angeles, Calif.

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Book Marks

(This column will appear from time to time to provide snapshots of current books that appear both useful and readable.)

Cobol Support Packages Reviewed

Cobol Support Packages, by Stanley M. Naftaly et al; John Wiley & Sons Inc., New York; 180 pages; $12.95.

This is a revised, updated and hardcover edition of the articles that appeared last year in *Data Processing Digest* edited by Richard G. Canning, who is also one of the editors of Wiley's Business DP Library.

Naftaly and his coauthors review, one at a time, the types of support packages actually available to aid both programming and productivity in a Cobol shop. They make liberal use of comparative charts which are large enough to read comfortably; unfortunately the size of the charts may be responsible for the book's size which is somewhat awkward.

Operating Systems Revisited

Operating Systems, A Pragmatic Approach, by Harry Katzan Jr.; Van Norstand Reinhold Co., New York; 360+ pages; $13.95.

This comprehensive review uses IBM's OS/MFT as the illustration. As a result, readers who operate in that environment gain a new perspective on their system in language that is more "comfortable" than most of the manuals IBM has released on the subject.

The author devotes a fair portion of his text to the concepts and IBM implementations of virtual storage, including specific comments on the file access methods and organizations that are or will be available to the VS user. There are numerous and understandable diagrams throughout.

The makeup and functions of a time-sharing operating system is described in terms of IBM's TSS, which is somewhat unfortunate in view of the vendor's effective abandonment of that project.

A Logical Fortran Primer . . . Plus

Flowcharting and Fortran IV, by Perry Edwards; McGraw-Hill Book Co., New York; 147 pages; $3.95.

This slim, soft-covered book is for beginning programmers but avoids the dreary rehash of DP history and EAM operations so typical of primers.

It jumps right into the explicit step-by-step type of logical approach a programmer must follow to get work done on a computer. Edwards uses Fortran to illustrate his points, but this isn't a Fortran text. He points his readers to vendor manuals and other texts if they want to really know the language.

Each chapter ends with practice exercises and an appendix includes answers so the reader can check his understanding of the subject matter.

Data Bases May Help, but...

DED Seen as Key to Data Management

By Don Leavitt
Of the CW Staff

GAITHERSBURG, Md. – Management generally is very concerned about allocation and control of personnel and equipment in a DP operation, but is just as likely to leave data resources – the basic element in *data* processing – "virtually unmanaged." And this generates problems of data fragmentation, according to Charles J. Bontempo of IBM's Federal Systems Division.

Data base management systems are often cited as solutions to this problem, particularly when there are several interfacing applications, but a data element dictionary (DED), built and maintained manually or on the computer, may be an even better approach, he felt.

Writing in last month's issue of *Data Management,* the analyst said it is "hard to overstate" the impact of the development of multi-application systems on data resources, but the result often is the introduction of data elements on an ad hoc basis.

Fragmentation of responsibility for data may cause two contradictory situations. Programmers or analysts in one area may overestimate the cost in time and money needed to extend their application, because they are unaware the data required is already accessible through another application.

Or, DPers in one area may abandon maintenance of a given series of data fields that is no longer pertinent in their application, without realizing that another application had been depending on that maintenance.

When management has no means of monitoring and controlling the users of its data resources, it is unable to notify the users of anticipated changes in the data. Readily available solutions may be adequate without being the best or least costly in a particular environment, Bontempo said.

The available remedies may provide technical solutions to the fragmentation problem, he admitted, but they don't necessarily provide true management solutions.

Duplicate data, for example, is not always undesirable, he said. There are times when it is desirable to maintain and process duplicate data. What is needed to prevent accumulation of truly redundant data is an "unequivocal, clear description of the data resources and the uses to which the data is put."

If management's real objective is control of the data resources, rather than mere elimination of redundant data, the selection of the method of control must be based on relevant evidence and that, according to Bontempo, is where the DED comes into play.

Conceptually DED is a single authoritative source of information on data elements, their use and their interrelationships, in a standard organization and format.

The DED should be organized into three basic sections to accommodate data element entries for input processing, data base residency and output processing. Unique labels should be used to identify elements even when they appear in more than one section; but a documented list of synonyms and cross-references should be part of the DED.

Bontempo concluded his article with a series of questions that should help interested installations in developing their own DEDs.

'Scope' Test Series Extended To Evaluate Systems Analysts

NEW YORK – Two new multiple-choice tests from Software Sciences Corp. are designed to help DP managers measure proficiency of systems analysts.

These tests are said to produce a detailed and objective profile of the individual analyst's effectiveness in problem definition, data organization and analysis, feasibility report preparation and use, design procedures and system testing and implementation.

About the only area untouched by the tests deals with how well the analyst relates to other people as he pursues his work.

The systems analyst tests are an extension of Software Sciences' System 360/370 Computer Operator, Programmer Evaluation (Scope) test series.

In addition to the analyst's tests, Scope includes programmer-oriented exams on any of the several forms of Cobol, Fortran, PL/I and Assembler Language. Operating System facilities, debugging techniques and telecommunications systems are covered in other tests.

Under Scope, operators can be tested for their knowledge of operator functions, operating system interface requirements and Hasp.

Where appropriate, the tests are available in VS, OS and DOS versions, a spokesman said. The tests can be used individually or combined into a series to for a complete evaluation system.

Scores are charted on profile forms which rate each participant's technical knowledge and compare it with the capabilities deemed appropriate for his position.

Scope is available on a service basis, in which Software Sciences provides the evaluations, or on a licensing plan in which users retain the evaluation materials on their own premises. Under either plan, the company periodically reviews and updates the test questions.

Scope license fees start at $2,000 per individual test, but users may acquire the rights to any nine tests for $11,000, or to all tests now in the Scope library for $20,000.

The firm is at 888 Seventh Ave., 10019.

360/20 Utility Costs $100

EDMUNDSTON, New Brunswick – A parameter-card-controlled utility program that provides IBM 360/20 users with a wide range of gang-punching/reproducing options for card I/O is now available for $100 from the developer, Franz L. Papst.

Using at least two, but no more than four specification cards, the program can reproduce any number and combination of columns. Alternatively, it can be used to gangpunch specified data into or "erase" data from any columns, Papst said.

Other capabilities include the offset-reproducing of any field up to 15 columns long, from any position in the original data cards into any position in the cards being generated. New data can be gangpunched into the columns on the new cards from which the offset field was taken.

Papst's program can punch as many as 999 duplicates of each original card and punch consecutive four-digit numbers into columns one-to-four of the duplicates.

Any of the possible operations can be carried out simultaneously, provided they are not mutually exclusive.

Control cards may be interspersed through the deck of cards to be processed, allowing a variety of jobs to be done in a single run.

The program is written in RPG and has been implemented on a 16K disk-oriented 360/20. Papst indicated he will modify the logic to work on a card system.

For $100, a user is provided with an object deck of the program and a supply of the specification card-coding sheets which double as the only generally available documentation.

Papst works at Fraser Companies Ltd., Rice St., but can be reached through RR3, also here in Edmundston.

For MMS General Ledger Users 1973 Will Be A Happy Year.

Since January, 10 companies have ordered the MMS General Ledger System. Each one of these corporations is worth more than $20 million (one is in the $800 million class). They all have the programming staffs and resources necessary to develop their own corporate financial systems. But even the big companies don't have unlimited EDP budgets.

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Data Briefs

Hazeltine Terminal Users Offered Impact Printer

GREENLAWN, N.Y. – An impact printer for users of the Hazeltine 2000 Video Display Terminal is available from Hazeltine Corp.

The unit comes in two configurations: the Model 1200 operates at 120 char./sec with 80- or 120-column carriage width; the Model 300 prints 30 char./sec on carriage widths of 80 or 118 columns.

Forms control options include horizontal tabulation and selective vertical tabulation.

The Model 300 leases for $113/mo on a one-year contract including maintenance, or can be purchased for $3,400. The Model 1200 rents for $141/mo on a similar contract or costs $3,995.

Communications Week Theme Set

WILMINGTON, Del. – "Data and Voice Communications User Selection Techniques" will be the theme on the 1973 National Communications Week.

Sponsored by the Communications Systems Management Association, the "roving" one-day seminars will be held June 25-29 in New York, Philadelphia, Washington, D.C., Chicago and San Francisco.

Seminar topics will include defining system objectives and cost requirements, hardware selection, vendor evaluation and final system implementation.

The seminar costs $85 for CSMA members and $95 for nonmembers. However, for registration forms received after May 1, 1973, both fees go up another $10. Further information is available from CSMA, 1102 West St., Suite 1003, 19801.

CRT Terminal Replaces TTY

SOUTHFIELD, Mich. – The Model 3001 CRT communications terminal from International Terminals Corp., a subsidiary of Bendix Corp., is designed as a direct teletypewriter replacement.

The unit displays 80 char./line on a 16-line field. The characters are 25% to 50% larger than those of comparable terminals, the firm said.

The terminal operates in full- or half-duplex mode and standard features include blink, automatic key repeat, addressable cursor and switch-selectable send rates.

The Model 3001 costs $2,300 from the firm at Bendix Center, 48076.

Terminal Guide Published

LEXINGTON, Mass. – GML Corp. has published a guide to single-station remote terminals.

The *Terminals Review* guide includes cost and technical data on printing and non-printing terminals. The publication is issued quarterly and costs $28/year. The firm is at 594 Marrett Road, 02173.

For PDP-11 Use

PHI Adds Concentrators

By Ronald A. Frank
Of the CW Staff

TEWKSBURY, Mass. – PHI Computer Services has added a remote concentrator software package to its 370ϕ telecommunications processing system. The 370ϕ system provides the necessary software to use a DEC PDP-11 for the same functions as an IBM 270x, 3704 or 3705.

The concentrator capability handles messages at more than one remote terminal and transmits the concentrated data to a front end at the central site over one high-speed line.

The concentrator package can run on the PDP-11 models 10, 20, 40 and 45 and the system can support most major IBM terminals that can run with an IBM line controller. The 370ϕ system can operate with both 360 and 370 host CPUs.

Loader Feature

Three other communications packages are available as part of the 370ϕ system. The 270x emulator package allows users to connect their PDP-11 directly to the multiplexer channel of a 360/370 to perform the function of an IBM line controller with more features at less cost, the firm said. The emulator costs between $6,000 and $10,000.

Used with the front-end communications software package, the PDP-11 performs polling, error recovery, code conversion and replaces IBM Btam and other access methods. This software, ranging from $20,000 to $38,000, allows the PDP-11 "front end" to operate with software written in Cobol, PL/I and BAL.

'Intelligent Emulator'

The third package is an "intelligent emulator" that takes larger transient Btam routines and shifts these functions into the PDP-11 front end. While similar to the emulator package, this software contains additional features including an "interface" to IBM's CICS system.

In network configurations the mini together with the appropriate PHI software costs about 10% to 40% less than comparable front ends, a PHI spokesman said. The mini-based system also costs less than an IBM 3704 for networks with 15 or more lines.

Another capability of the communications software allows users to operate with dual PDP-11s to perform both emulation and front-end line control functions, a spokesman said. When used at a central site, the concentrator package demultiplexing software can handle data up to 50 kbit/sec using a synchronous line discipline.

PHI supplies only the communications software packages. The firm is a division of Wang Laboratories and is at 836 North St., 01876.

Datran Is Ready But Rates Aren't

VIENNA, Va. – Datran has told prospective users it is ready to begin specialized common carrier service in some cities late this year. The service is scheduled to be initiated in eight cities [CW, March 7] but proposed tariff rates were not available.

Datran will not be able to begin service until its rates are filed and approved by the Federal Communications Commission. The carrier will not be ready to make an official statement on its proposed rates until September 1973, a spokesman said.

Initial services will be private-line facilities operating at 2.4-, 4.8- and 9.6 kbit/sec and a "special" offering at 1.344 Mbit/sec, Datran said. Although the Datran network design provides for switched digital service, the first customers will be provided with non-switched lines similar to other private-line carriers including AT&T and MCI.

"We are ready to begin working with customers now," the spokesman said.

Bell Protection Plan Suspended, FCC May Hearing to Decide Need

WASHINGTON, D.C. – The Federal Communications Commission has suspended AT&T's plan to install equipment for the prevention of harm on the lines of private-line customers.

Originally scheduled to take effect Feb. 15, the protection plan was set for a hearing because AT&T has not made a "persuasive showing" that protection is required "in all cases where customer equipment is connected directly . . . to private-line facilities," the FCC said.

The telephone company does not propose to add protective measures to the lines of customers who use carrier-provided equipment even though such equipment may be similar and "equally likely to cause the same kinds of alleged harm," the FCC said.

"It would appear that if there is a real danger of such harm, all services should be protected," the commission said.

The reasonableness of AT&T's plan is in doubt because Bell has said it cannot specifically identify instances of past interference from private-line users, the FCC said. The commission implied that past experiences should provide proof of the harm that AT&T said can arise from customer-provided equipment.

In justification of its protection proposal AT&T told the commission that private line facilities share common Bell System facilities such as "local distribution cables, carrier systems and mainframes, [all of which] are subject to harmful voltages, line imbalance and excessive signal levels."

But the commission questioned why AT&T did not plan to put protective equipment on all facilities instead of specifying only those which use non-carrier equipment. It also questioned why the plan limited protection to customers who install equipment after Feb. 14, 1973. Presumably all customer-provided equipment, regardless of installation date, could be "subject to the same types of harm," the FCC said.

The protection plan was suspended until May 15, 1973, pending the outcome of hearings on the proposal.

Audio-Response Unit Enhanced To Accept Touch-Tone Inquiries

MOORESTOWN, N.J. – Applied Information Industries has expanded the capabilities of its VSC-8000 audio-response system which combines the functions of an IBM 7770 system with the features of an IBM 270x or 3705 controller.

The VSC-8000 can attach directly to either the multiplexer or selector channel of an IBM 360/370 system. The system can accept Touch-Tone inquiries from telephones, generate answers back to the phone or send frequency shift keying tones to produce a hardcopy on a printer or characters on a display.

The VSC-8000 is plug-compatible with the IBM 7770 response system and most programs can be converted directly to the Applied Information system. A synchronous data port capability allows the VSC-8000 to emulate the IBM bisynchronous adapter, enabling the system to handle IBM 3270 CRTs.

The system, which includes built-in modems to allow the user to replace Bell 403, or equivalent data sets, uses a Data General Nova mini with 8K words of storage (which can be expanded depending on the user's configuration). The audio-response vocabulary is expandable in 36- and 72-word increments to a maximum of 288 words.

The system costs from $50,000, depending on configuration.

On a three-year lease/purchase plan, the system could save users almost $7,000 compared with a comparable IBM system, the company said.

IT TAKES A SMART DP MANAGER TO PICK AN INTELLIGENT TERMINAL.

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Our intelligent Sycor 340 has 8K bytes of programmable memory that gives you the flexibility to accept those additional tasks. Simple, non-intelligent terminals don't.

With them, what you lease is what you get.

And there are other reasons to choose our 340.

Like an additional 8K bytes of firmware to get you started right away.

Like sophisticated binary synchronous communications procedures to catch transmission errors and retransmit data automatically.

The advantage of unattended communications. To let you send, process and receive data overnight.

And a wide choice of peripheral equipment, including a selection of printers from 30 cps to 300 lpm.

So before you lease a terminal, check with Sycor. We already have more than 6,000 intelligent terminals in use in 33 countries.

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DATA GENERAL INTRODUCES THE LOADED NOVA.

The loaded Nova is the new Nova 840 and the most comprehensive set of software/hardware capabilities ever available with a Data General computer.

It comes with a built-in Memory Management and Protection Unit that lets you expand main memory to 128K 16-bit words. Base price with 16K of memory is $16,530.

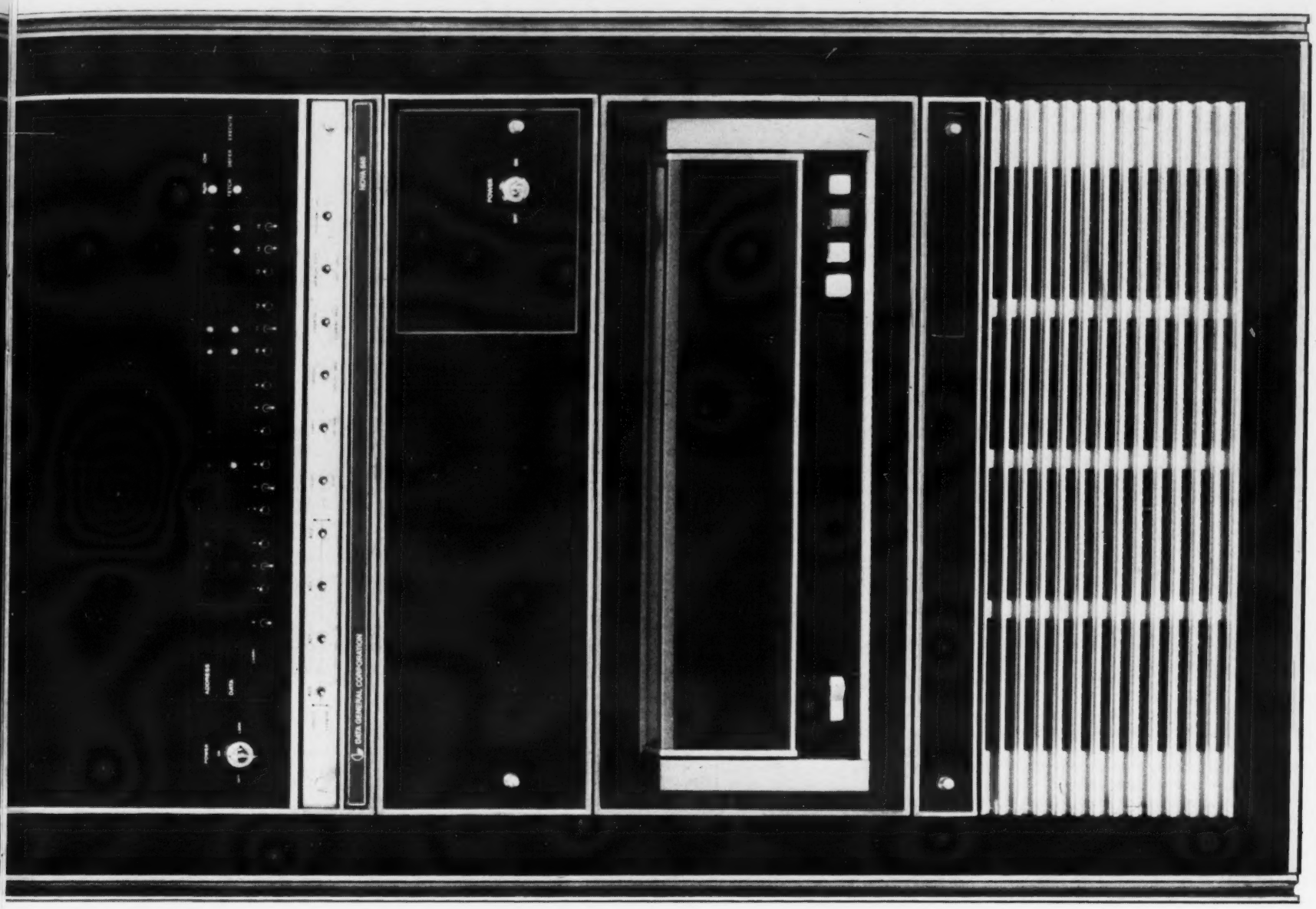
Nova 840 runs a comprehensive Real-time Disc Operating System (RDOS) for dual programming operations.

A new BATCH executive lets you pick your I/O devices, load your jobs, and walk away.

It has our new Fortran 5, Extended ALGOL, Extended Timesharing BASIC, and a whole library of proven Data General software; proven software that we can deliver now.

And our Remote Job Entry software can let the 840 double as a high-powered terminal to a big computer someplace else.

With the right kind of configuration (like the one shown), all that software is available free.



ON YOUR DOORSTEP IN UNDER 90 DAYS.

The Nova 840 in the picture has a central processor with 32 to 64K of main memory, a high-speed Floating Point Processor, hardware Multiply/Divide unit, fast-access disc storage, and 9-track mag tape.

The picture doesn't show lots of the other things you can get with Nova 840: line printers, card readers, Novadisplay terminals, fixed-head Novadiscs, moving-head discs, Nova Cassette tape, communications interfaces.

Nor could we show you the applications and service experience we've developed in the course of building, installing, and supporting over 6,000 Nova computer systems all over the world.

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Call with an order: we'll put a loaded Nova on your doorstep in less than 90 days.

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Southboro, Massachusetts 01772

Bits & Pieces

Device Turns Oscilloscope Into Graphics Terminal

HARBOR CITY, Calif. – For $1,095, Data General Nova minicomputer users can obtain an interface that turns any X-Y oscilloscope or larger X-Y display into a full graphics display terminal, according to Megatek Corp.

The BP-721 is equipped with an internal refresh memory which enables the user to plot points, lines, alphanumerics and real-time dynamic displays.

Software is supplied for programming with Basic language commands.

The units are available from 1526 W. 240 St., 90710.

IBM-Type Disks for PDP-15 Users

SUNNYVALE, Calif. – Xebec Systems Inc. is offering IBM-type 2315/5440 disk drives in moving head disk systems for the PDP-15 and PDP-9.

The Xebec 6000 series moving head disk systems are available with a removable disk pack or a fixed cartridge. The series features an average access time of 35 msec and track-to-track access time of 9 msec. Storage capacity per drive ranges from 2.5M to 10M 8-bit bytes.

The Xebec moving head disk systems, including couplers and formatters, will work with any 2315/5440 cartridge drive. Various makes of drives may be mixed within the system in any combination.

Prices for complete moving head disk systems range from $9,975 to $15,850. The firm is at 566 San Xavier Ave., 94086.

Text System Costs $375/Mo

CHATSWORTH, Calif. – The Videotype-I from Lexitron Corp. is a stand-alone text preparation system consisting of a keyboard device tied to a video display screen.

As text is typed it appears on the display screen to permit editing before hard copy preparation. For example, "edit," "delete," "insert" and similar command keys permit insertion of new phrases or sentences, transposition of paragraphs within pages or to different pages, spreading out text from single to double spacing, justification or right margins, etc., the developer said.

Once edited, hard copy is produced through a command key on the console.

Text data can also be recorded on cassette tape. Each cassette holds up to 30 pages of copy which can be loaded for future applications.

The system sells for around $16,000 or can be leased for about $375/mo from Lexitron Corp., 9600 De Soto Ave., 91311.

Unit Converts Graphic Data

ROCKVILLE, Md. – The Model PF-10D Pencil Follower, a servodriven, free-cursor digitizing system, is available from Computer Equipment Corp. (CEC).

According to CEC, the Pencil Follower converts any graphic data into digital form for computer processing.

Priced from $12,250 to $19,650, each Pencil Follower operates as an off-line digitizer but is supplied with a software support package which can run on most computers with a Fortran IV compiler. Delivery is 30 days. The firm is at 14616 Southlawn Drive, 20850.

Avco Installs MTI Add-On

STRATFORD, Conn. – Avco Lycoming Division has taken delivery of a 1M byte semiconductor memory from Memory Technology Inc. to replace 1M bytes of its IBM 370/155 main core memory.

The MTI-755 Semiconductor Memory Systems are plug-for-plug equivalent to the IBM 3360 Basic Storage Module used on the IBM 370/155, a Memory Technology spokesman said.

For 360s and 370s

STC Offers 6,250 Byte/In. Drives

LOUISVILLE, Colo. – Storage Technology Corp. (STC) has announced a series of magnetic tape subsystems with capabilities identical to IBM's recently announced 3420 tape subsystems [CW, March 14].

Both IBM 360 and 370 users can take advantage of the STC systems.

The IBM and STC systems feature increased data rates and faster access time. The high density and reduced Interblock Gap (IBG) result in triple the storage capacity per reel of tape. New techniques allow packing of data at a density of 6,250 byte/in.

The IBG is the length of blank tape needed between data records. The STC tape units use a gap of .3 in. as compared with the previous standard of .6 in. on IBM-compatible tape drives. This reduction is identical to the reduction in IBM's new 3420 tape subsystems.

The IBM drives were announced as being limited to users of System 370/135 and up because of the need for a 3803-2 controller.

IBM Allows for 360 Users

Following the announcement of STC's tape subsystems an IBM spokesman said "under certain circumstances the new units [IBM 3420s] can be used with IBM System 360 Models 50 through 195.

"The data rates of even the slowest new tape drive – the 3429-4 – exceed the allowable channel rates for CPUs below the Model 50.

"To prevent channel overload in Systems 360/50 and higher, consideration must be given to the other high-speed I/O devices attached to the system, to channel priorities and total aggregate data rate.

"Upon request, IBM will evaluate the user's 360 configuration to determine the feasibility of attaching the new tape units."

For 360 Users

Two models within the STC 3600 series, however, provide a dual-speed capability under program control. This feature allows 360 users to take advantage of the higher 6,250 byte/in. density recording for slower speeds, with the standard 1,600 byte/in. capability available at normal speeds.

Within the STC series, the higher density is offered across six models – 75, 100, 125 and 200 in./sec and the two changeable units. Data rates range from 470 kbyte/sec to 1.25M byte/sec.

Lease prices for the STC 3600 tape system range from $490/mo for the Model 3630 to $715/mo for the Model 3670.

Model	Cost/mo 1 yr. lease	Density (byte/in.)	Data Rate (kbyte/sec)
STC3630*	$540	6,250	470
IBM 3420-4*	$570		
STC 3640*	$595		625
STC 3650*	$620		780
IBM 3420-6*	$660		
STC 3670*	$635		1,250
IBM 3420-8*	$731		
STC 3675	$735	1,600/ 6,250	320/ 625
STC 3685	$855		400/ 780

*** For about $20 additional rental, both IBM and STC will provide combination 6,250 and 1,600 byte/in.**

Comparison of IBM and STC 6,250 Byte/In. Density Tape Drives

Cost comparison (see chart) indicates the STC units are about 15% cheaper than comparable IBM tape subsystems while operating specifications appear to be identical.

All STC units attach to the STC 3800-4 control unit. This controller can attach up to eight 3600 or the older 3400 tape units. The 3400 line can be field-upgraded to equivalent 3600 models, STC said.

The STC 3800-4 controller leases for $940/mo on a one-year lease which is $100 cheaper than the IBM 3803-2.

Deliveries will start in the fourth quarter of 1973 from 2270 S. 88th St., 80027.

Mini Allows Users to Write Own Instruction Sets

By Michael Weinstein
Of the CW Staff

OCEANPORT, N.J. – A new computer from Interdata incorporates a user-alterable Dynamic Control Store (DCS) which allows the user to write his own instruction sets, special algorithms or application functions.

The Interdata Model 85 is a 16-bit computer with an interleaved MOS/LSI solid-state memory providing a 270 nsec average main memory cycle time.

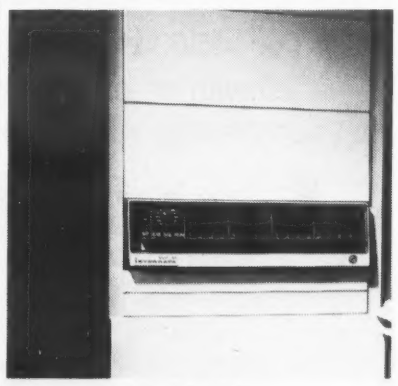
Capacity is 16K bytes expandable to 64K bytes. Standard features include 16 general registers, 15 of which can be used with index registers; hardware multiply and divide and floating point; direct addressing; 255 I/O interrupts with automatic service routine and 131 user level instructions.

The DCS contains 1,024, 32-bit words of 60 nsec bipolar read-write memory that can be used to produce instructions extending the general purpose instruction set.

Later, these user-written instructions can be modified dynamically without hardware modifications. Instructions are entered in much the same way as standard code – from paper tape, console keyboard, etc.

Standard Software the Same

All existing Interdata and customer software programs now being used on any of the company's New Series processors may also be used with the Model 85.



Interdata 85

This includes the standard Interdata Operating Systems: Basic Operating System (BOSS), Disk Operating System (DOS) and a Real-Time Operating System (RTOS).

Additionally, there are two software packages for direct support of the Dynamic Control Store: Microassembler and Microloader/debug programs.

With these programs no simulator is required since routines can be checked out through the DCS and debugged without hardware modifications of any kind, a spokesman said.

Microprograms in the Model 85 are typically three to 10 times faster than user level software for the same function, the spokesman asserted.

Options for the basic Model 85 include memory parity, memory protect, power fail/auto restart, and a line of peripherals and special modules including dual cassette and a 4,000-channel digital I/O multiplexer.

The Interdata Model 85 will be available in June, 1973. With 16K bytes of memory, built-in teletype interface and DCS, the unit will carry a price tag of $22,800.

The firm is at 2 Crescent Place, 07757.

Univac Adds to 9000 Series

BLUE BELL, Pa. – Univac has added the 9480 to its 9000 series of computers which can be attached to the Univac 8424 disk subsystem. The disk capability has also been added to the older 9400 system.

Operationally, the 9480 is the same machine as the 9400 but the 9400 uses core memory while the 9480 is the first commercial Univac computer to use semiconductor memory.

The use of semiconductor memory makes the 9480 about 10% cheaper than the 9400, Univac said.

The 9480 is available with main storage ranging from 65K to 262K bytes and upgrades come in 65K byte increments. Cycle time is 600 nsec for each two-byte word.

Up to 64 full-duplex communications lines – or 128 half-duplex – can be connected to the central processor. These are connected through one to four data communications subsystems, each subsystem accommodating one, four or 16 duplexed lines.

Operating software is the standard 9400 DOS which allows users to run priority processing of up to five programs concurrently, the firm said.

Also included in the software is the Information Management System (IMS) which is built around DAM, SAM and Isam. The advantage of IMS is that it allows users to take programs from other machines and run them on the 9480 with no programming modifications, a spokesman said.

The Univac 8424 disk subsystem is a large capacity subsystem with about twice the capacity of IBM 2314s, Univac said.

Each 8424 cabinet contains two spindles with 58,352K byte/spindle. The average access time is 42.5 μsec and the data transfer rate is 2.5M byte/sec.

Up to four cabinets – a total of eight drives – can be attached to a 9480 or 9400 system.

The 9480 configured with 8424 drives appears to offer users an alternative to the IBM 370/125 and the lower end of the IBM 370/135.

One major difference between the IBM and Univac machines is in their treatment of simultaneous multijob streams. IBM emphasizes "virtual memory" and paging while Univac stresses a memory management system of segmentation.

Lease price for the Univac 9480 – 65K byte CPU, 2 8424s, reader, printer and punch – starts at about $8,000/mo. on a five-year lease.

A comparable Univac 9400 would lease for about $9,000/mo over the same lease period.

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Disk memory equipment. This was our second area of concentration. In a remarkably short time, we have become the leading independent supplier.

Tape systems. We've recently begun to concentrate on tape. The result is that our new 1040 Tape Drive combines the features of others with our own experience. We intend to be a leader in this field.

The point is we have not grown by accident. Thirteen years after our beginning, we have become a leader in computer peripherals.

For information on peripheral products, call your local CalComp office, or contact California Computer Products, Inc., CW-M3-73, 2411 West La Palma Avenue, Anaheim, California 92801. (714) 821-2011.

CALCOMP

Here's just some of what's happening at the 1973 Computer Users' Forums.

And it'll be happening soon in a city near you:

BOSTON – Despite the proliferation of non-Bell data equipment, many users are still reluctant to ... communications ... carriers ... equipment ... and ... Bell System ... advantage ... to ... independent ... a Computer ... communications ...

BOSTON – "Conditioning" – to assure effective data transmission – is often one reason cited for a user's move to private lines, but nowhere in the Bell System does the carrier automatically provide preventive maintenance to assure the conditioning. Overlan, assistant telecommunications manager for First National ... Boston, told a Caravan ... on leased-line usage.

"A small computer ... Model 10 couldn't handle an on-line terminal system" without a major upgrade of the system, Jester said. Intelligent terminals allowed the firm to have the advantages of on-line entry in many respects without a large central processor, since most editing and error correction take place at the source of the transaction.

BOSTON – A major ... line data entry is that the process ... out errors as they occur rather than save them for a later edit cycle, according to Herb Cronin, assistant vice-president of Boston's First National Bank.

Boston's ... real-time system at the bank ... accounts receivables, stock transfers ... and mutual funds. ... Cronin ... 370/155 ... systems.

Thibault advised users who choose ... multivendor systems to bring each vendor in one at a time and explain what is expected from him in the mix.

"Ask him at that time if he will have any problem maintaining his equipment with the other vendors' units also on the line."

Once all vendors state they can provide proper service, bring them all in to a group meeting – before any contracts are signed – and explain the ... responsibility.

Star Market DP director Donald MacKinnon told the Computer Caravan/73 software evaluation panel he would never contract for custom programming of an application that he knew was going to entail heavy maintenance. Systems ... as payroll, with its ... tax routines ... house, he ... programmers ... know the ...

... workshops ... particular area ... warning other ... areas.

In all, more than 300 users ... sessions on data ... tions and installations ... given on a separate ...

"We're looking at a key-to-disk system," one user noted, "and the forum on these systems plus the three displays on the ... and what the problems might be. In fact, we had never heard of one of the exhibitors before it was mentioned in the panel discussion."

... as an omnipotent ... Zayre Corp. has found ... lation of an IBM 1287 more than justified on one application alone.

Any other applications later put on the scanner "are pure gravy," according to Zayre's Noel Goulston at the OCR work-shop.

BOSTON – Sometimes all the in-house staff knows – even after a packaged system has been considered operational for six months – is that "it seems to work," according to Paul Ladd, programming manager for Worcester (Mass.) County National Bank (WCNB). It may be as much as a year after the initial use of a system before the user knows enough to see where and how he might like to modify the program logic.

The Computer Caravan/73 is on its way. And the Users and Panelists attending Forums in the beginning of our tour have exchanged a wealth of information on a wide range of topics. Information you can't get in books. Experience-based information from the people who've been through it. User talking to user in shirtsleeve workshops, panel discussions and seminars. It's a unique exchange of information that will benefit you and your company.

FORUM TOPICS

Day 1 – Data Entry – Including keypunch replacement (shared Processor), Intelligent Terminals, OCR, and Direct (on-line) Data Entry.

Day 2 – Communications – Including Data Transmission (dial-up and leased lines/broadband) and Equipment Selection (communications processors and control equipment).

Day 3 – Installation Management – Including Personnel recruitment and training, Programming management and independent peripherals (including memories).

OPEN SESSIONS

Each afternoon features a new, open session for all those who wish to attend. A different subject will be opened up each day at 2:30 for discussion and controversy.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

PANELISTS

Next stop: Anaheim. And here are some of the panelists who will be there: Jim Feeley, Philco-Ford; Roger Pelot, United California Bank; Frank Oliver, Hughes Aircraft; Leslie Luvy, Gibralter Savings & Loan; Tom Wilson, Walt Disney Productions; Robert Campbell, Sunkist Growers. ---

Send in your reservation form now, and your space at the 1973 Computer Users' Forums will be reserved.

The Computer Caravan/73

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COMPUTERWORLD

Computer Users' Forum Registration

Name_____

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1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

YOUR INDUSTRY

01 Mining/Construction/Oil & Refin.
02 Manufacturing – Computer or data system hardware, peripherals/ other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other: _____

YOUR FUNCTION

01 Corporate Officer
02 Data Processing & Other Operational Management
03 Data Processing Professional Staff
04 Consultant
05 Lawyer/Accountant
06 Engineering – Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other: _____

2. Please check the appropriate city:

____ Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
____ Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
____ Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
____ San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
____ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00 ☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

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For additional registrations, copy this form – or write for extra copies.

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Special to Computerworld

ELKHART, Ind. – Increased inventory turnover and more current, accurate product costing are the major benefits now being achieved through the use of a small computer system at Crown International, a manufacturer of professional tape recorders and hi-fi components.

"We are using the computer system to increase our inventory turnover from 1.3 to four times a year," explained Glen Ryman, vice-president of production and data processing manager.

"We are also using the system to maintain actual, up-to-date costs for all items in inventory," Ryman stated.

Two Solutions

Previously, Crown handled its data processing half manually and half through an outside service bureau. However, with growth, a need for faster, more automated processing developed.

The company studied a number of different types of computers and also investigated the possibility of getting more out of its existing service bureau or using other types of service bureaus.

Based on these analyses, an NCR Century Series 50 computer system was in-

The Small Systems User

stalled last May. Costing $1,750/mo, the system includes a central processor with 16K characters of memory, a dual-disk memory unit capable of holding more than 8.4M characters in disk storage, a 200-line/min printer, a card reader and an input/output writer.

Flexible System

According to Ryman, whose data processing staff includes a systems analyst, a keypunch operator, secretary and several clerks, the system was selected not only because of its low cost but because of its general software concept and upwards compatibility.

"The system's software packages are modular, making it possible to pull out parts and use them in other ways," he pointed out. "Furthermore, the system's Neat/3 programming language is easier to use and less complex than other languages. In addition, the system gives us complete upwards compatibility which will enable us to grow in the future without having to change a single program or disk pack."

5,000 Items

Using NCR's Material Requirements Planning package, Crown now maintains inventory, bill of material and "where used" master files in which information is contained for each of the company's 5,000 raw material, work-in-process and finished goods items.

The company has also customized the package's inventory master file so it includes labor and material costs pyramided by level of assembly for each item.

"The system takes a unique approach in that pyramided costs are linked into the inventory master file," Ryman explained. "This enables us to have on-line inventory costing providing actual, current cost of sales in addition to perpetual inventory control for each of 5,000 items."

To operate the system, finished goods or zero level unit requirements based on sales forecasts are input. The system explodes requirements down to the requisition level – as many as 30 levels – and writes material parts requisitions on a daily basis.

Labor distribution data in terms of time and costs and inventory transactions in terms of units are also entered daily. Then, periodically depending on need, the system produces a variety of reports.

Perpetual Inventory Report

"We produce a perpetual inventory report on all 5,000 items once a month," Ryman stated. "But, on a request basis, we can get the status of any particular item or line at any time.

"We produce a variance report every two weeks which compares materials actually used to projected usage," he related. "We also use the system to control unscheduled usages of material over and above requirements. In addition, a production scheduling report is generated every four weeks.

"Bill of material listings can be run for any product at any time," he added.

"With the Material Requirements Planning package, we can go both ways," he explained. "We can increase or reduce requirements and see what the results of these adjustments are. A system is only as good as its capability to handle exceptions and exceptions are very easily handled with the package. Therefore, we are able to adjust inventory at any time to bring it into line with sales forecast parameters.

"Another program we are running is purchase modeling," he stated. "This program enables us to do a better job of buying custom parts which must be ordered on an annual basis.

"The system is also a tool which engineers can use to achieve greater standardization and eliminate part duplication," he emphasized. "For this purpose, we have developed unique codes which can be used to produce material catalogs and detail parts lists."

According to Ryman, the system will also be used to process payroll, receivables, payables and sales analyses, all of which will be tied along with inventory and cost of sales data into the general ledger.

A manufacturer of tape recorders and hi-fi components such as amplifiers, preamps and speakers, Crown International supplies amplifiers to performing groups such as Jefferson Airplane, Rolling Stones and the New York production of Jesus Christ Superstar.

PDP-11 Disk Subsystem Is DEC DOS-Compatible

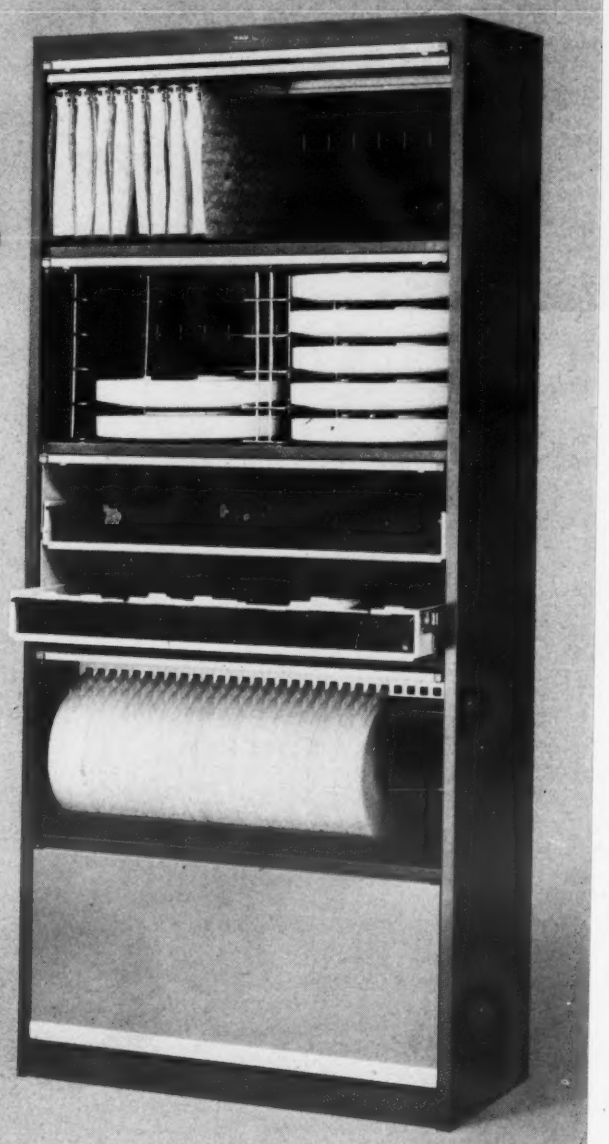
SAN DIEGO – PDP-11 users can obtain a disk subsystem with DEC DOS compatibility, a spokesman for Pacific Micronetics, Inc. stated.

The PMM-11 system – which includes controller – is a plug-to-plug replacement for the DEC RF/RS11 disk and control, the spokesman said. Capacity of the system ranges from 262K to 1M 16-bit words.

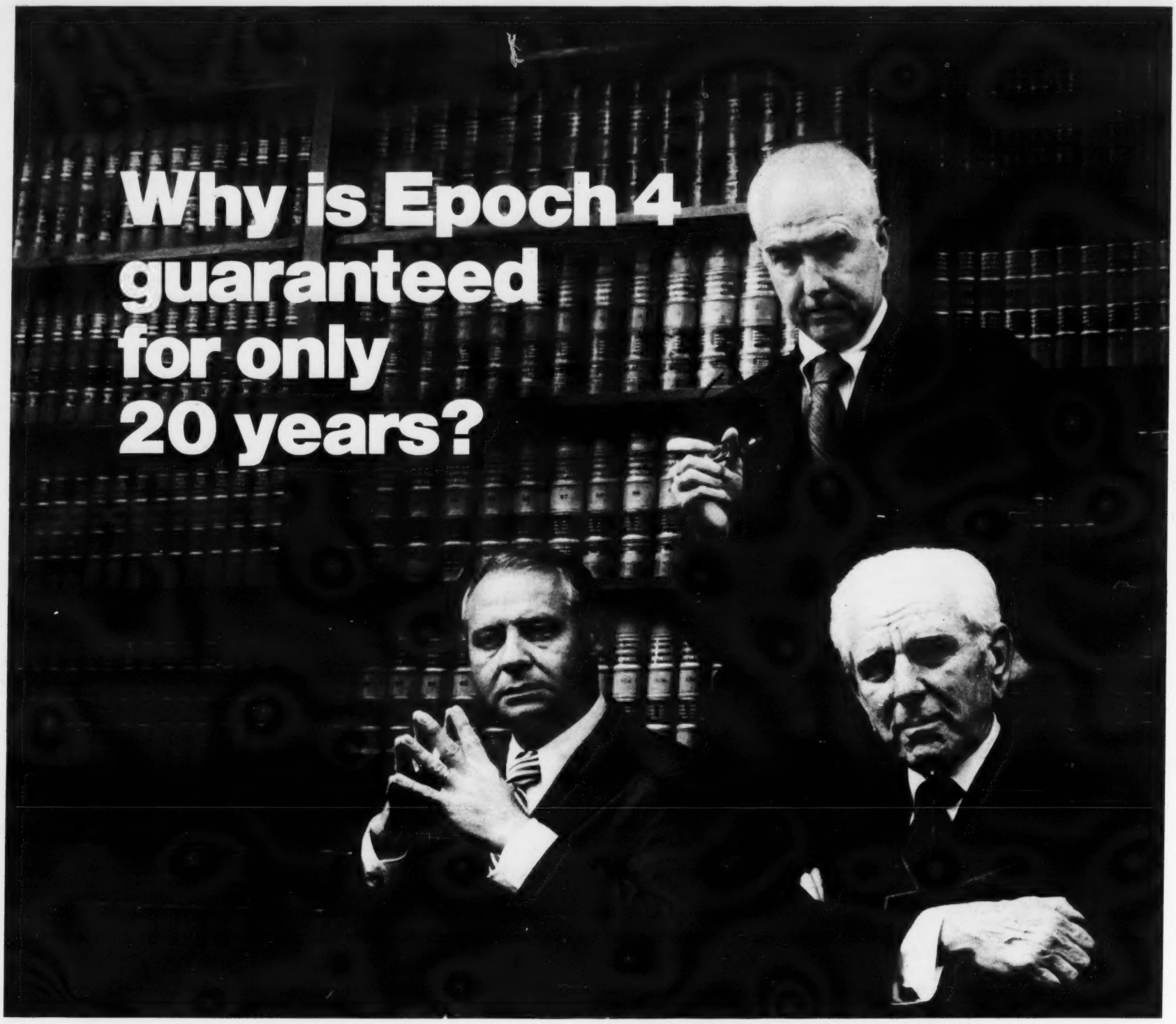
Prices for the disk subsystem range from $8,500 to $12,100 from 5037 Ruffner St., 92111.

Orderly, Safe Storage In Minimal Space –that's proven Tab Data Media Cabinets. Versatility was born into these cabinets. They have been designed to accommodate hanging printout binders, disk packs and racked or hanging magnetic tape. They are even ideal for storing cards. Tab Data Media Cabinets can be ordered with roll-out shelves that bring data media right to your fingertips. And, if storing miscellaneous office paraphernalia is a problem, forget it. Just tuck it away in the generously-sized Data Media compartments and close the stylish TrimLine doors. Neat. For complete information about Tab 2, 3, 4 and 5 high Data Media Cabinets, call your local Tab representative. Or, write Tab Products Company, 2690 Hanover Street, Palo Alto, California 94304.

Tab System/3 Organizer



TAB PRODUCTS CO.



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Bruning Has Three Card Duplicators

SCHAUMBERG, Ill. – A complete line of aperture card duplicators is available from the Bruning Division of Addressograph-Multigraph Corp.

Designed for firms requiring verification of their copy cards, the OP-37 produces up to 800 duplicate aperture card/hr in variable quantities, each deck individually addressed for distribution.

The OP-35, featuring automatic operation, is capable of producing over 1,100 diazo copy/hr.

The semi-automatic OP-60 produces duplicate aperture cards from either a positive or a negative master in approximately five seconds. An optional OP-61 add-on module enables the operator to dial up to 99 copies from one master without pressing the copy button, the firm said.

All three machines have sealed anhydrous ammonia systems which require no venting, and include safety interlocks on top covers and front doors.

Bruning is at 1834 Walden Office Square, 60172.

Digitizer Uses Mag Cards

PLACENTIA, Calif. – A graphic data digitizing system incorporating digital display of the X-Y coordinate values and a stylus to digitize the points is available from Elcomp General.

X-Y coordinate data from graphs, patterns, layouts, X-ray negatives, photographs, templates and drawings is recorded on a magnetic stripe on standard tab cards.

The magnetic card system has read/write capability and can be interfaced to minicomputers by a 26K-bit buffer. This allows variable transfer rates up to 4,800 bit/sec, a spokesman said. An automatic card feed system has a capacity of over 200 cards, he added.

Price of a complete system is $6,995. The economy model with only teletype and RS-232 outputs is $3,600 from 1937 Kilmer Drive, 92670.

DEC Adds PDP-11 Interface

MAYNARD, Mass. – The M1801 16-bit relay output interface from Digital Equipment Corp. is designed to allow PDP-11 users to control programmable instruments, display lamps, and power relays in applications which require isolation between the TTL-compatible computer signals and external power signals.

Each bit of the PDP-11 data word controls one of the 16 reed relays mounted on the module with relays operated at rates up to 80 actuation/sec, a spokesman said.

Price for the M1801 is $350.

Station Added to LC-720

CHERRY HILL, N.J. – An electronic data station from Logic Corp. for the LC-720 key-to-disk data entry system has a non-integral keyboard and display unit. The display contains a 64 character set with IBM 029-compatible layout.

Hardware Roundup

The panel utilizes light emitting diodes (LED) for both four-character alphanumeric and three-character number display. A 30 position field definition display is also part of the panel along with various status indicators.

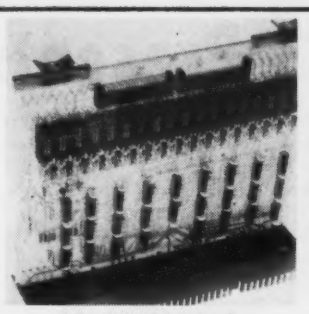
Further information is available from the firm at 21 Olney Ave., 08034.

UPS Serves Dual Computers

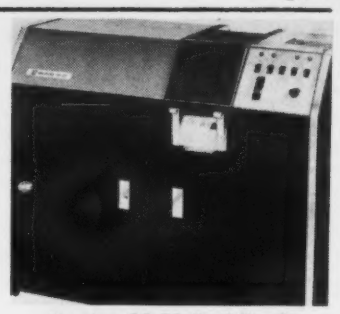
WILLOUGHBY, Ohio – Availability of an Uninterruptible Power System (UPS) to serve dual redundant computers or other uninterruptible loads was announced by Cyberex, Inc.

The system is offered in ratings from 10 KVA single phase to 250 KVA three-phase and is designed so at least one of the redundant loads is maintained regardless of any single system failure, the firm said.

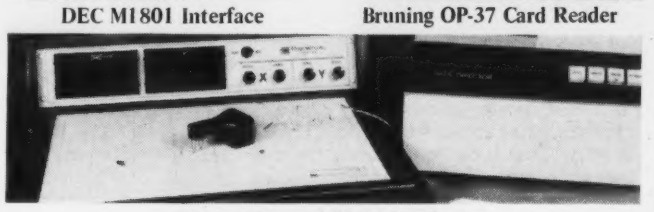
Cyberex is located at 4399 Industrial Parkway, 44094.



DEC M1801 Interface



Bruning OP-37 Card Reader



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Intercon '73 Presents Feast of 57 Technical Sessions

NEW YORK – IEEE Intercon, March 26-30, will focus on eight technical areas featured in 57 sessions at the Hotel Americana here.

The session areas range from computers and information to communications and data transmission to marketing. Also included are: energy utilization and control, electromechanical technology, electro-optical technology, solid state and instruments and instrumentation.

The technical sessions begin on Monday afternoon with seven sessions running concurrently each morning and afternoon, ending Friday at noon.

"Computers in Public Systems" on Monday highlights a New York City highway project, evaluation of transportation systems and the legal considerations of computer use in public systems. The session is part of the technical area "Computers and Information."

This technical area also features sessions on "Computer Applications in the Manufacturing Environment" and "The Evolution of Large Government Computing Systems," both on Tuesday morning, and "Minicomputers: Boon or Blight" in the afternoon.

Minicomputer session organizer Ivan Flores said the session will critically examine minicomputer applications, hopefully drawing examples from the audience.

Wednesday morning the session "State of Computing Outside the U.S." will provide an overview of world market development and will forecast 1973-77 utilization of computers, comparing U.S. industry patterns and the positions of major international suppliers.

Patrick J. McGovern of International Data Corp. will assess these aspects of the world computer market. In addition, representatives of two major users in Europe and Japan will examine different approaches to system implementation, and Bolt, Beranek and Newman, Inc. representatives will discuss computing in the People's Republic of China.

Nobel laureate William Shockley, co-inventor of the transistor, will participate in the panel session "The Transistor – Yesterday, Today and Tomorrow" on Wednesday afternoon.

On Thursday and Friday there will be four separate sessions on different aspects of computer-controlled test systems and automatic test equipment control.

A products exposition at the New York Coliseum will open March 27 with more than 400 display-demonstrations sponsored by both U.S. and overseas manufacturers.

The conference expects over 30,000 attendees. All registration will be at the door of either the Hotel Americana or the New York Coliseum.

Further information on the conference is available by writing to IEEE Intercon, 345 E. 47th St., 10017.

Societies/ User Groups

NCC Is 'Conference Within Conference'

MONTVALE, N.J. – Over 90 sessions on DP applications and computer technology are being planned for attendees of the 1973 National Computer Conference & Exposition to be held June 4-8 in the New York Coliseum.

"The heart of the program will consist of more than 90 sessions and panels divided into two basic areas – Methods & Applications and Science & Technology," Chairman Harvey L. Garner explained.

"Each constitutes a 'conference within a conference' and will give the attendee the opportunity to pick and choose among an extraordinarily wide variety of concurrent sessions," he added.

The Methods & Applications program is headed by Robert W. Bemer, who was program chairman of the 1970 ACM National Conference.

"In contrast with past conferences, which have centered primarily on high technology, the 73 NCC Methods & Applications sessions will focus on those day-to-day techniques essential for the effective utilization of computer power within business, government and industry," Garner said.

Sessions in the Science & Technology program, headed by Carl Hammer, will examine aspects of development of new technology and the state of the art in areas of concern to the computer scientist and the DP user.

More than 100 papers, as well as panel discussions are scheduled. Topics up for review and analysis include systems, software, computer hardware and architecture, communications and data base management, simulation, computer graphics, education and foundations of computer science.

The NCC, the successor to the semiannual Joint Computer Conferences, is sponsored by the American Federation of Information Processing Societies, 210 Summit Ave., 07645.

Interdata Users Gather for Seminar

GAITHERSBURG, Md. – A technical seminar sponsored by Interchange, the Interdata users group, will feature presentations on topics ranging from languages to configuring a network, April 2-3 at the National Bureau of Standards here.

The group will also hold a membership meeting and open forum, and hear the latest news from Interdata.

One Monday session is entitled "Operating Systems – the economics of minicomputer buying has changed; or what you save on the merry-go-round you can lose on the swings."

R. Crosson from NBS will discuss "Making the Universal I/O Module Universal."

Topics on Tuesday include a look at Mimic and Extensive Basic.

Interchange is at 2 Crescent Place, Oceanport, N.J. 07757.

Calendar

March 23, Philadelphia – **Communications Systems Management Association Data Communications seminar.** Contact: CSMA, 1102 West St., Suite 1001, Wilmington, Del. 19801.

March 26-28, Ottawa, Ont. – **Data Processing Institute annual data processing conference and trade show, Conference/73.** Contact: Data Processing Institute, P.O. Box 2458, Ottawa, Ont., Canada K1P 5W6.

March 28-30, Los Angeles – **Profit Workshop on Manufacturing Management Systems Symposium** sponsored by Informatics Inc. and the American Production and Inventory Control Society. Contact: University of California, Los Angeles Extension, Los Angeles, Calif. 90024.

March 28-29, Chicago – **The First Project Control/70 Users' Conference.** Contact: Robert P. Wolk, Vice-President, Marketing, Atlantic Software Inc., 912 Lafayette Building, Fifth and Chestnut Sts., Philadelphia, Pa. 19106.

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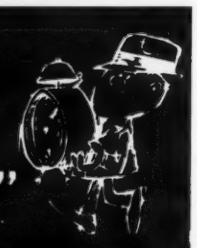

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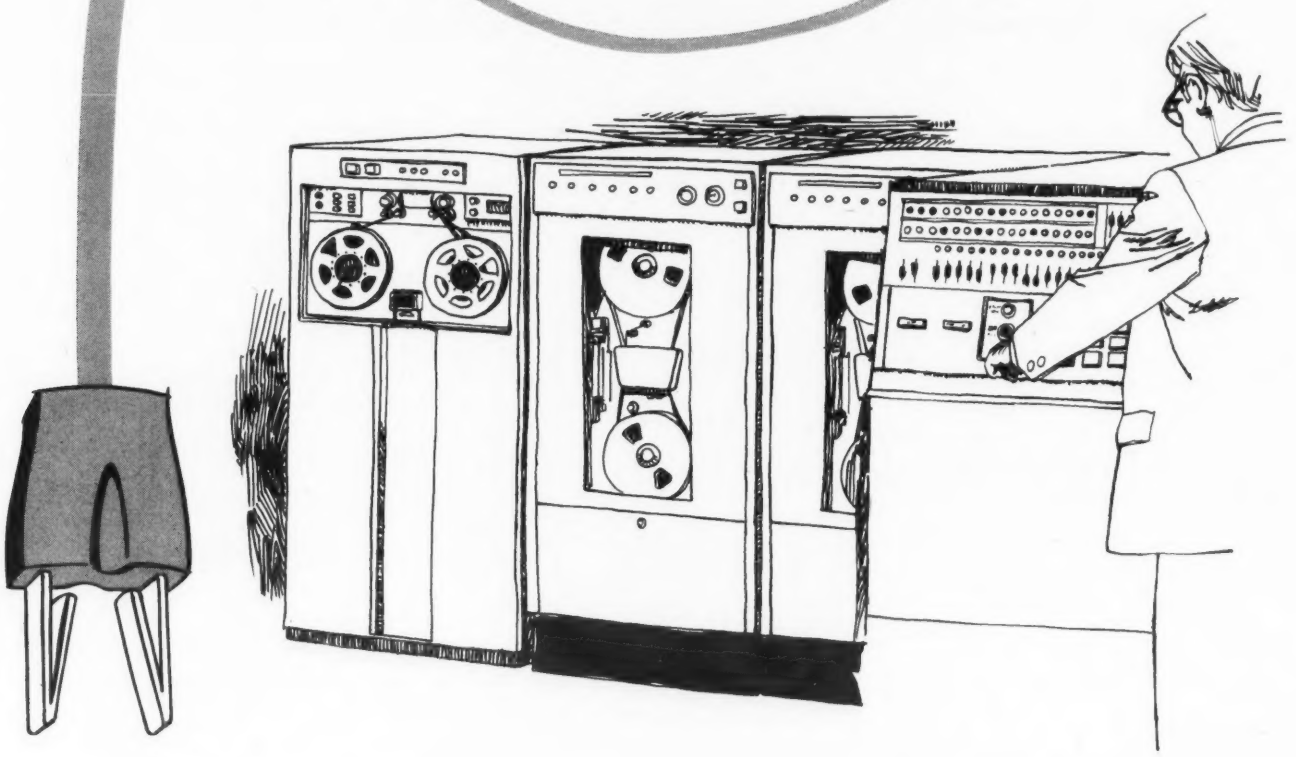

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La Caravane arrive

Computerworld's French market Computer Caravan is a French show. Because it's being co-sponsored by the leading French Computer publications, *Zero-Un Informatique*. With the leadership of Zero-Un's widely respected monthly magazine and weekly newspaper, French market computer users will know they're getting an Exposition that is uniquely theirs. We'll be conducting The Caravan in local hotels, and orienting the user Forums to accommodate the needs of French market users.

This combination of French control, French publicity and user-orientation will draw thousands of important EDP buying influences as we travel to six cities in 2 countries. And these people are part of one of the most rapidly growing computer markets in the world. Here are some of the figures, according to a recent survey by International Data Corporation:

Overall 1971 EDP Expenditures	$1.48 billion	
Projected increase for 1972	8.1%	(1.6 billion)
Projected increase for 1973	14.5%	(1.83 billion)

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Data Entry equipment (especially key-to-tape, key-to-disc) is projected for a 28% increase in 1973.

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French Market Caravan Schedule

Dates	City	Site
May 2-4	Paris	Hotel PLM Saint Jacques
May 7-9	Bordeaux	Palais Des Expositions
May 15-17	Marseille	Palais Des Congres
May 22-24	Lyon	Palais Des Congres
May 28-30	Strasbourg	Palais Des Expositions
June 5-7	Brussels	Palais Rogier

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Please send me more details — including market facts and brochure — on The European Computer Caravan's which I have checked.

- ☐ French Market Caravan (May 2-June 7)
- ☐ English Market Caravan (Sept. 4-Oct. 18, 7 cities)
- ☐ German Market Caravan (Oct. 30-Nov. 30, 5 cities)

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Uncapher Heads USC Unit

Institute Strengthens Academic-Application Links

By E. Drake Lundell Jr.
Of the CW Staff

MARINA DEL REY, Calif. – "There is a growing interest in relating computer science to application areas through more systems-oriented work," according to Keith Uncapher, former Afips president and director of the Information Sciences Institute at the University of Southern California (USC).

Because of this, the new institute has been structured so researchers, faculty members and graduate students will have a great deal of exposure to applications areas and so the institute will have the right type of people and enough resources to operate effectively in that area, he said.

The institute was started just nine months ago by Uncapher who left Rand Corp. to set it up and at the same time retired from his Afips post to devote more time to the project.

To carry out the goals of the Institute, Uncapher is hiring basically systems-oriented people as staff members and augments this professional staff with faculty from the university and with graduate students.

The trade-off with faculty in other parts of the university is particularly useful, he said, because it provides a vehicle for experts in certain application areas, such as medicine, engineering, business and so forth, to have a voice in the development of computer systems

In addition, Uncapher said, the training the graduate students receive will be particularly useful in their later careers. "I think that part of any graduate student's education in the computer sciences area should be in the applications and systems area," he stated.

The institute, he said, will be staffed 60% by full-time professional staff members and 40% drawn from the faculty or graduate student ranks.

After the institute obtains a broad base in the computer sciences and its application to particular areas, Uncapher wants to expand the research into multidisciplinary areas such as the economy, ecological problems or medicine.

"There are exciting opportunites for us in the field of medicine," he noted, because "USC has one of the world's largest hospitals" which can be used to test computer systems developed by the institute and which can contribute knowledge about the problems computers can help solve in the hospital environment.

Another area of early concern for the institute will be in the field of digital communications and Arpa-like networks.

In this area, the institute, which sports an electronics laboratory and small mechanical lab-

Education

oratory in addition to its computer systems, is developing and designing CRT terminal-based systems for use in the business environment, he said.

These hardware and software systems would be designed specifically for particular business users which would allow those users a better option for handling their paperwork than is currently available, he added.

In addition, Uncapher noted, the institute has a major effort underway to study the security of operating systems from both intentional and unintentional intrusion.

Uncapher is also convinced the institute can make "some progress" in another research area, that of automatic programming, which would allow someone to state his problem to a system and have the system automatically convert the problem to computer code.

Uncapher also indicated research into socially oriented issues would grow in the near future, but noted that to date computer people have not proven the case for the use of their systems in dealing with pressing global problems.

"When we can demonstrate how effective we can be, then there will be a more positive response" from both funding agencies and the general public at large, he stated.

But many of these problems will take a commitment on the part of computer users to help in the solution, he said, and he predicted some day almost every company would have a line officer familiar with or trained in computer science who would be able to show management effective ways of dealing with problem areas.

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Hideo Hirayama, President of Dempa Computerworld Company and Patrick McGovern, President of Computerworld, Inc. look at the first copy of Shukan Computer.

Dempa Publications is the leading Japanese electronics publisher.

Dempa publications is currently the leading Japanese publisher of information services on electronics, including *Dempa Shinnbun*, the 200,000 circulation daily newspaper of electronics. Dempa maintains twenty-five editorial offices throughout Japan, the U.S. and Europe, which, along with *Computerworld's* editorial staff and correspondents, will provide the largest newsgathering organization of its kind in the world.

The Staff of Dempa Computerworld Inc.

Dempa Computerworld Inc. will do more than publish.

The new company set up to publish *Shukan Computer* is called Dempa Computerworld, Inc., and it will become involved in a variety of communications activities. It will conduct surveys on the Japanese computer market, hold seminars on new computer equipment and techniques, and, in early 1974, plans to run a "Computer Caravan" Forum and Exposition. Similar to the U.S. Caravan, the Japanese Caravan is tentatively scheduled for five of Japan's largest cities. Right now, *Computerworld's* U.S. and European Caravans are scheduled for 28 cities in 1973, and a total attendance of more than 85,000 professional visitors is expected.

Japanese computer market large and growing.

Right now, Japan is the largest single-country computer market outside the U.S. As pointed out by *Computerworld's* President, Patrick J. McGovern, "There are now over 15,000 computers installed in Japan, and the number is growing at over 25% per year. This growth and the current liberalizations of Japanese import policy on computer equipment makes Japan an especially attractive market for computer product and service marketers headquartered in the U.S. and Europe."

The Japan Ministry of International Trade and Industry indicates that by the end of 1975 there will be 38,000 computers worth over $12 billion in Japan. There will also be very rapid growth in the use of peripherals and terminals, and services and contract software, providing almost unlimited business opportunities.

Shukan Computer's Circulation starts at 35,000

Initial circulation of *Shukan Computer* is guaranteed at 35,000, which provides in-depth coverage of computer users and industry personnel. Based on IDC data file lists and the resource lists of Dempa, circulation is divided about 80% to end-users and 20% to the computer industry. Circulation development methods will be the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.

Advertising in Shukan Computer is easier than it looks.

Advertising sales for *Shukan Computer* will be handled in the United States by Computerworld Representatives. Rates are reasonable, based on a CPM of $35 (at current conversion levels—All rates are in Yen, and are estimated in dollars for convenience only). Full-page units are 9½" x 14½". Smaller units are available.

Also, *Shukan Computer* will provide translation services and aid in the establishment of marketing channels for companies new to the Japanese market.

Don't you always celebrate a birth with a cigar?

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As Pat McGovern puts it, "*Shukan Computer* will combine some of the best features of *Computerworld* with some of the proven successful techniques of Dempa Publications, to produce a publication that is unique in Japanese trade publishing. We expect it to be a great success!"

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CI Notes

Calif. Rejects IBM Bid

Special to Computerworld

SACRAMENTO, Calif. – The state Finance Department has rejected a bid by IBM for a planned $40 million state computer center but plans to reopen bidding again after modification of the RFPs.

Rejection of the IBM bid came a week after a bid by Univac was turned down. The two firms were the final bidders on the project.

A spokesman said that IBM's bid was turned down on the advice of counsel because a clause in IBM's response indicated it was not a firm bid.

The new center is part of a $150 million centralized computer system planned by the state over a five-year period.

NCR Sets Biggest 280 Order

DAYTON, Ohio – NCR has received an order for 11,000 additional 280 point-of-sale units from Montgomery Ward.

In the next several years, Ward expects to install 16,000 units, including minicomputers and associated equipment.

The combined order represents "not only the largest order ever received for the firm's 280 equipment, but the largest single order ever written with any customer," according to President William C. Anderson.

The units are part of Ward's $60 million program linking stores to local NCR 725s, which then communicate with one of four DP centers throughout the country.

Wema Exits Wescon

SAN FRANCISCO – With the withdrawal of Wema as cosponsor of the Western Electric Show and Convention, plans are under way to formulate a new trade show management organization to operate Wescon, according to Fred J. MacKenzie, chairman of the Wescon board of directors.

Wescon is scheduled Sept. 11-14 in Brooks Hall here.

Autotransaction Newsletter Ready

NEWTON, Mass. – International Data Corp. (IDC) is launching a biweekly newsletter, called *Autotransaction Industry Report,* to report on trends and investment opportunities in a computer market sector described as "growing twice as fast as the computer industry generally."

"Last year, users in the U.S. spent over $700 million on information appliances (such as special financial terminals, point-of-sale devices and ticketing systems) and computer service networks that automate the transacting of business," Patrick J. McGovern, president of IDC, stated.

The annual subscription rate for 26 issues, scheduled to start in mid-April, is $85.

A $70 prepublication annual rate is currently available from 60 Austin St., Newton, Mass. 02160.

Supershorts

Datatype Corp. has granted to Addressograph Multigraph Corp., Varityper Division, certain rights to market Datatype's DFR-300 Optical Reader for printing applications in the graphic arts industry.

– – –

Exhibitors at the New York Caravan reported booking orders over $3 million.

– – –

Datapoint Corp.'s South African distributor, Computer Advances (PTY), Ltd., has received orders valued at $2.5 million from three major customers for Datapoint 2200 dispersed data processing systems and Datapoint terminals.

– – –

System 2000 has been registered as a trademark for a data management system by MRI Systems Corp.

Letter to Justice

CLA Rips 'Anticompetitive' IBM Lease

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – The Computer Lessors Association has blasted the new IBM 48-month term lease plan in a letter to the Justice Department citing the "anticompetitive" aspects of the plan.

The letter said the new plan, in addition to IBM's earlier fixed-term lease plan and extended-term lease plan, "locks out competition and strengthens IBM's ominous hold on the industry.

"As a monopoly, IBM should be required to abandon these plans," according to the letter sent to the assistant attorney general for the Antitrust Division.

'Competition Locked Out'

The discount incentive on purchase and waiver of extra user charges "effectively makes it impractical for installed customers to look to other suppliers for 48 months – competition is locked out," the letter said.

The association has complained about other IBM actions in the past in letters to the Justice Department, particularly about the fixed- and extended-lease plans as well as IBM maintenance price increases for purchased equipment.

But, the new letter noted, none of these complaints has stopped IBM from "using its power to the detriment of the computer industry."

The group noted Justice was the one government agency capable of putting pressure on IBM for changes in its policies toward the competition in the industry, since it was presently suing IBM. "We implore you to take action," the letter said.

The new IBM plan applies to popular models of the 370 line, and not to all IBM computer equipment currently available, the group noted in its letter.

Because of the stiff cancellation penalties in the new IBM plans, the user who tries to take this route will be effectively tied into IBM for the next 48 months, according to the association, making him unavailable as targets for sales efforts of the association's members.

In the past, leasing companies have been able to combat the fixed- and extended-lease plans of IBM by offering to pay the users cancellation charges on such plans and by amortizing the cost of those penalties over the life of the new lease.

Those plans covered only peripherals so the cancellation charge, while steep, was not on the entire system, but just on part of it and could be absorbed in the new lease rather easily.

Longer-Term Plan Locks In User And May Prove IBM Overreacted

By Ronald A. Frank
Of the CW Staff

NEW YORK – IBM's recent announcement of a four-year lease plan on its mainframe systems gives some interesting insights into the company's marketing strategies.

By urging customers to sign up for longer-term leases, IBM is launching a major effort to blunt the trend to system purchases. On the other hand it seems to favor later deferred system sales by offering customers the 50% credit at the end of four years.

Analysis: IBM Lease Strategy

The message comes through that IBM wants rental revenue now – when the 370s are new and desirable – and four years from now it wants to unload the systems as they approach the twilight of what IBM has determined will be their life cycle.

Some observers see 1977-80, when a period of high incidence of 370 purchases will be encouraged, as the time for IBM to clear the decks for a new generation of machines.

One of the company's current problems is the large amount of 360s being returned from long-term monthly rental customers who are now switching to 370s. While some of these systems are being "rehashed" and reportedly introduced as terminal and other newer system components, IBM still has a problem with returned machines. It is reportedly destroying many of these systems rather than allowing them to find their way back into the market. So the "rent now, buy later" impetus of the 48-month lease seems aimed at eliminating a large 370 turn-in period.

A longer-term lease plan seems to be part of a recent IBM marketing trend to lock in the user for longer and longer periods. Under the 1956 Justice Department Consent Decree, IBM was prohibited from offering long-term deals, according to legal experts. But the decree regulation ran out after 10 years, and lately IBM has been pushing further into the type of extended leases pioneered by the leasing companies. It may be an attempt to see how far IBM can go before legal roadblocks develop.

But in trying to lock in the user for a four-year period, IBM may have structured the plan too rigidly for even the most ardent IBM site. It could have been expected that customers would have to pay a penalty for altering their leased systems with downgrades or a shift to independent memories.

But the provision that levies a penalty on upgrades within the same system seems a radical departure from previous IBM policy. The company had usually encouraged system enhancements that meant additional revenue.

It may be that IBM is trying to isolate its customer from any non-IBM equipment enticements by putting him in a system straightjacket for four long years. It remains to be seen whether the customer wants to be boxed into such limited flexibility. And all this for no reduction in monthly rental, but only the elimination of overtime charges. IBM may have over-reacted.

85,000 People Expected

Caravan to Globe-Trot 28 Cities

BOSTON – "The Computer Caravan/73 will be the largest computer show in history before it is finished, visiting 28 cities in eight countries before the end of the year," according to Patrick J. McGovern, president of *Computerworld,* the show's sponsor.

In all, McGovern estimated more than 85,000 people will visit the exposition before it ends its tour. And next year promises to be even larger, he said, since a Japanese Caravan will be launched in 1974 to join those in the U.S., France, Belgium, England, Germany and the Scandinavian countries.

"The secret of the Caravan," he said, "is that it is basically a local show where local users can discuss common problems and solutions and can meet with local salesmen from the various exhibiting companies.

"But that should not hide the fact that the Caravan is also a truly international show with parts held in most major computer-using nations this year. Next year it will tour all of the major computer-using nations in the free world with the addition of Japan to our schedule," he noted.

He said the 52 companies currently showing almost 300 products in 68 booths will not travel the whole circuit necessarily.

'Pick and Choose'

"Many firms aren't yet ready to penetrate one or another market that we cover," according to David Sudkin, marketing manager for the European Caravans. "But with our tours to different market sections they can pick and choose their particular markets."

Some firms on the U.S. Caravan will tour with the rest of the Caravans in Europe, he said, but they will also be joined by a large number of manufacturers that only do business in Europe or are subsidiaries of U.S. companies that market primarily in Europe.

Sudkin said the European Caravans were being sponsored by *Computerworld* and the leading computer publications in the local areas they serve. For example, he said, *Zero Un Informatique* is cosponsoring the show in France and the French-speaking countries and *Computer Management* is the cosponsor for the English-speaking portion of the tour.

After the Caravan completes its 10-city U.S. tour on April 26, it will leave for France where a six-city tour begins on May 2 in Paris.

Then the Caravan will open its UK stand on Sept. 4 in Manchester and complete its four-city trip in London on Sept. 27. The third tour goes to Scandinavia and The Netherlands.

The final 1973 tour is in Germany.

Test Instrument Usage Rising

PALO ALTO, Calif. – The test instrument industry is rebounding strongly from a two-year decline, and is expected to increase from $806.5 million last year to $1.3 billion by 1977, according to a report issued by Creative Strategies, Inc., a research and consulting firm here.

In addition, the market is showing strength in different areas than previously, the report noted. Whereas the principal area for test instrument usage was R&D, use is currently growing more rapidly in manufacturing, according to CSI.

With decreased government spending in 1970 and 1971, when the total market fell from $770 million in 1969 to $743 million in 1971, test instrumentation companies were forced to become more customer oriented rather than technologically oriented, the report observed.

The Federal Government now accounts for about 40% of all U.S. sales, down from 50% in 1969, the report added.

Foreign sales of test instruments are expected to grow at a slightly faster rate than domestic sales during the next five years due to an expanding electronics industry abroad, the firm said.

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Firm's Market Goal Is Common Carriers

By E. Drake Lundell Jr.
Of the CW Staff

LOS ANGELES – Among all the firms serving the data communications industry, Computer Transmission Corp. is something of a unique entity: its real goal is to sell to the common carriers and not to end users.

The firm "is something of an odd company," admitted President Ray Sanders, "since it is really designed to be a vendor to the common carriers" in the long run.

But "there is a great deal of difficulty in selling equipment and services to the common carriers," he added, and therefore the business of the firm today is rooted in meeting the needs of end users.

Today the entire data communications market is in its infancy, he explained, but is basically divided into three areas: the black box makers who sell modems, front ends, etc. to end users; systems houses that attempt to configure entire nets for those users; and the common carriers who offer the basic networks.

The problem with the common carriers is that the development and implementation cycle is too long, he said, which hinders the ability of the end users to use the network effectively and efficiently.

Let Outsiders In

Therefore, the large common carriers should open up their development cycles to outsiders who can react innovatively and quickly to the emerging needs of users, he added.

Even the newly emerging specialized common carriers might get too big to be able to react quickly to new ways of doing things that could best serve their users, Sanders said.

In addition the new digital nets will open up many "new opportunities" to firms that are in a position sell to users of that type of system.

The experience Computer Transmission is gaining today in the end-user market. however, should be a help with its ultimate goal of serving the common carrier market, he said.

"A company needs the knowledge it can gain in serving end users in order to tell the common carriers what they should do to serve the end user better," he said.

The common carrier market is hard to sell to, Sanders indicated, because the ground rules for dealing with the carriers change often and the firm selling to one of them has to be extremely adaptive.

Company Profile

But even if the firm does not reach its goal of serving the common carriers, Sanders indicated there was a place for his firm.

"If the carriers follow a restrictive policy of dealing with outside firms, then we will find our major market in the end user business, just like it is today," he said, noting "there are unique opportunities in structuring large end-user data communications networks."

The future for Computer Transmission, he indicated, is in the market of selling entire systems for end users. To do this, the firm will not produce all of the necessary equipment in-house, but will purchase certain equipment from other vendors if it meets the end user's requirements better or less expensively than Computer Transmission's equipment.

The firm is currently looking at entering the European market, he said, both to offer service to European firms and U.S. firms with branches in Europe.

Executive Corner

■ Dr. John E. Bertram and Dr. Ralph E. Gomory have been elected vice-presidents of IBM Corp. Bertram is IBM's director of engineering, programming and technology; Gomory is director of research. Each continues in his present position.

■ Barry M. Harder, cofounder of Entrex, Inc., has been elected chairman of the board, and cofounder David Barber becomes president and chief executive officer.

■ Fred C. Ihrer, an original founder and recent president of Comress, has been named chairman of the board.

■ Alvin S. Brown has been elected president and chief executive officer of General Computer Service, Inc. He will also serve on the boards of GCS General Computer Service, Ltd., Canada, and General Computer Service, U.K. Ltd.

■ Samuel G. Johnson has been named president of Syncom Business Systems, Inc., of Cleveland, Ohio, a wholly-owned subsidiary of Syncom Inc.

■ Paul F. Seckendorf has been elected to the newly created position of vice-president, OEM marketing, at California Computer Products, Inc.

■ Paul B. Arnstein has joined General DataComm Industries, Inc. as vice-president, operations.

■ Robert M. Scheinfein has been elected vice-president, sales, of Data Precision Corp.

■ E.A. Joakimides has been named a vice-president of Remote Computing Corp. in charge of the Technical and Operations Division.

■ Samuel M. Thomas, Jr. has been named vice-president and general manager of Potter Data Products Service, Inc., a subsidiary of Potter Instrument Co.

CII, Siemens Agree on Consortium

PARIS – An agreement toward the creation of a European consortium was finally signed by France's Compagnie Internationale pour l'Informatique (CII) and Germany's Siemens Corp., but an originally slated participant, Philips, only looked on.

The agreement provides for the division of Europe into marketing areas, with Siemens taking over CII's German subsidiary, and CII assuming Siemens' interests in France. Other areas will be serviced by "whichever company is the strongest, or potentially the strongest, there," according to *EDP Europa Report.*

The plan also calls for coordination of product lines, with the objective a unified system compatible with third-generation machines to compete with IBM.

The delay in signing the agreement, announced a year ago, was caused largely by the philosophical differences between the two firms and Philips, the newsletter said.

Philips plans to continue development and support of the P .1000 series which, EDP Europa Report said, Siemens believes "has no place in the proposed common range of machines."

Rotating Seminars Begin

CHICAGO – The first in a series of rotating management seminars sponsored by the Association of Data Processing Service Organizations (Adapso) will be held here March 22-23, at the Marriott Motor Hotel. The topic of the meeting is business aspects of systems design and programming.

Directed toward operational personnel, "these seminars will concentrate on the business aspects of specific functions of the computer services industry . . . ," observed J.L. Dreyer, executive vice-president of Adapso.

The meeting costs $50 for members and non-members. Adapso is at 551 Fifth Ave., N.Y., 10017.

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Current Policy Detailed

OEM Import Orders Could Bypass Japan Restrictions

By E. Drake Lundell Jr.
Of the CW Staff

Although Japan's import policy on computer equipment is likely to be liberalized in 1977 [CW, March 14], the following article analyzes the current policy.

TOKYO – A look at Japan's current rules for the import of computer equipment shows opportunities both for end user suppliers and OEM suppliers, even though those on the OEM side of the business might have less trouble getting their equipment into Japan.

The rules, as promulgated last year, indicate that Japan – in order to help bring its imports from the U.S. more in line with its exports – promised to expand the import limit so the U.S. share of the computer market could rise to 50% from its 46% share at that time.

The government said it would have no objection to increased imports, as long as they did not exceed this 50% figure on an annual basis.

Computer Makers Unrestricted

However, a recent U.S. report from the executive office of the President noted "the six Japanese electronic computer manufacturers will be permitted to import without restriction upon application computer peripheral equipment . . . for original equipment manufacturer (OEM) purposes.

"Under this arrangement," the government report indicated, "Japanese computer manufacturers will be able to buy U.S.-made peripherals and parts for incorporation into Japanese computer systems without item-by-item review by the Japanese government."

The items imported by the Japanese computer makers will not be included in the 50% limit placed on American imports, the Japanese government specifically confirmed later.

However, according to International Data Research, an industry research firm here, foreign computer equipment only accounted for 41.2% of the deliveries of computers in Japan last year, not the 46% estimated by the government.

More Imports This Year

Because of this, the firm said, the Japanese commitment to allow for expansion of imports will result in permitting more than $103 million more in imports this year than was permitted last year.

Therefore, in addition to the $480.5 million worth of equipment purchased last year by Japanese users from U.S. companies, U.S. firms will be able to sell an additional $103 million worth of equipment this year.

However, it should be noted that a large part of this market is controlled by IBM-Japan which will be counted in the imports allowed from the U.S. even though it manufactures in Japan and is more than 50%-owned by foreign investments.

On the other side, the future could be bright. Any U.S. firm that can land an

Analysis

OEM contract with a Japanese computer maker could make unlimited shipments to that mainframer without having to go through the problems associated with obtaining import permission from the Japanese government.

However, one area of the Japanese government's aid to domestic manufacturers was not changed at all in the liberalization last year – the "buy Japan" policy of the government.

Even though the government did relax this policy in several other areas of the economy, it stated "wherever possible" all governmental computer needs would be met by Japanese-owned domestic sources. It also stated for the record that IBM-Japan would be considered as a foreign firm in this category also.

This "buy Japan" policy not only applies to government agencies, International Data Research noted, but also to "large segments of the user market where Japanese government control is exercised or where direct government subsidies are received."

Examples of the industries expected to follow a "buy Japan" policy, the report said, include the public utilities; rail and air transportation; telephone communications; educational institutions; and government-owned industrial firms.

Foreign Orders & Installations

The University of Rome, Italy, has ordered a Univac 1110 1x1 for scientific and technical applications in engineering, physics, chemistry and mathematics. Installation is scheduled for April 1974.

A Datacraft DC 6024/3 digital computer has been shipped to France as part of the first OCR system to be used in a postal letter-sorting application in Europe. The computer was supplied through an OEM agreement with Recognition Equipment.

The New South Wales Department of Public Works has ordered an interactive graphics system from Varian Data Machines. The system, which includes two Varian 620s, will be used by government architects for large-scale building projects.

Nettingsdorfer Papier und Sulfatzellulose-Fabrik AG, an Austrian papermaker, has ordered a Measurex control system.

The Atmospheric Environment Service of Canada has ordered a Control Data Corp. Cyber 70 Model 76 to upgrade its weather forecasting facilities throughout the country.

The British Steel Corp. has ordered two Honeywell Model 716 systems as front ends to an IBM 370/145 in a production control system at its Llanwern strip mills.

The Skofja Loka Computer Center, Yugoslavia, has ordered a Univac 9700 for production control, scheduling and accounting. The center serves a manufacturer, a weaving plant and an agricultural cooperative.

Instrumentation Engineering has delivered a System 390 to Standard Telefon Og Kabelfabrik, an ITT affiliate in Oslo, Norway. It will be used to test components in electronic switching systems.

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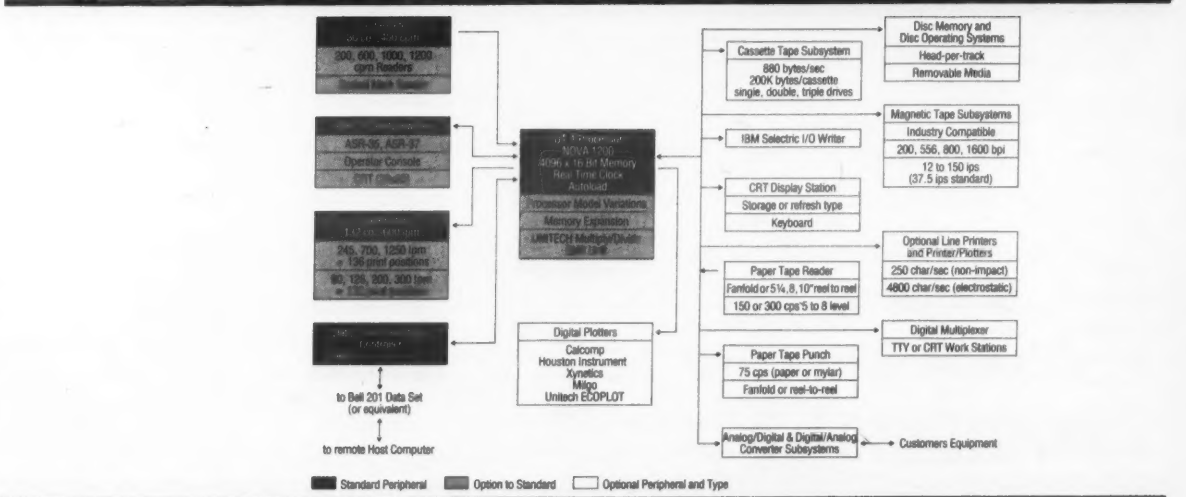

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Price Drop Coming In 'Truly Elastic' Memory Market: AMS

MOUNTAINVIEW, Calif. – The memory market is a truly elastic market, according to Bob Lloyd, president of Advanced Memory Systems here.

Whenever the price of memory is cut in half, he explained, the size of the potential market more than doubles for the firms in the business.

And in the next few years, Lloyd said, the price of memory should drop considerably from its present levels, which some have indicated are already extremely low.

But even though there will be significant reductions in the price of memory devices over the next few years, Lloyd believes the units will not improve drastically in speed over the same time period, even though there will undoubtedly be some improvements.

The reason for the large price drops in the memory areas will be the significant reductions in manufacturing costs, he indicated.

Presently, he said, chips make up around 60% of the cost of a large memory box, but they are becoming larger and larger components of the entire system, so in a few years 90% of the cost of a big system could be in the silicon chips and the remainder in software support.

The production of the chips is still an art to a large extent, Lloyd indicated, but he said it is approaching the state of a science and the industry is working hard to get the art out of the production process.

Contracts

Logicon, Inc. has been awarded a $14.5 million contract by the Army Corps of Engineers on behalf of the U.S. Post Office to design and install a system for mechanization, routing control and vehicle control systems at 21 bulk mail centers. The centers are now being established throughout the U.S. and are expected to be operational by 1975. The centers will utilize a total of 180 minicomputers in the handling of second, third and fourth class mail in bulk form and parcel post as individual pieces.

Sperry Rand Corp. has been awarded a $4.6 million Navy contract for AN/UYK-7 computer systems and a $2.5 million Navy contract for navigation computers and related equipment.

Auto Tell Services Inc. has contracted to provide computer accounting services for James-Kingsley Oldsmobile, Lancaster, Pa. and Chinetti-Garthwaite Inc., Ferrari dealer, Rosemont, Pa.

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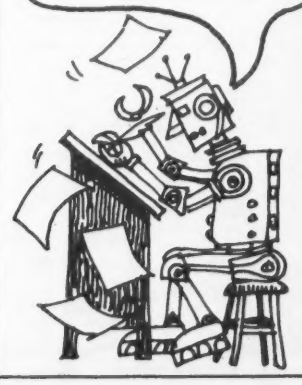

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$82 Million Loss Totaled By UCC With 3 Writeoffs

DALLAS – Although University Computing Co. announced an $82.8 million loss for 1972, the company is "currently operating at a profit" and expects to report earnings for the first quarter and for 1973, according to Chairman Sam Wyly.

Of the $82.8 million, $32 million represents losses in a terminal subsidiary sold during the year to Harris Intertype Corp.

There was a $33 million writedown of goodwill, and $29 million in writedowns and accelerated depreciation on computer equipment, mostly on lease to others by Computer Leasing Co., another subsidiary.

Wyly said the writedowns, losses and charges conclude a two-year program of debt reduction, disposition of unprofitable or inappropriate businesses, and the structuring of UCC into strong, separately managed companies.

Revenues for the year declined to $101 million from $109.7 million in 1971, when the firm earned $2.3 million.

In January, subsidiaries Computing Utility Co. and Gulf Insurance Co. operated at a profit, and the company as a whole was profitable with no capital gains, Wyly said.

The insurance subsidiary earned $11 million in 1972, up from $4 million in 1971. Gulf also realized $14.4 million of capital gains, most of which occurred in the first quarter.

University Computing has cut its indebtedness by $56 million in the last two years, Wyly said, and has increased its investment in the Data Transmission Co. subsidiary to $18.5 million.

West Coast Scene

Three Minimakers Post Rising Earnings

Three West Coast minicomputer makers, General Automation, Inc., Microdata Corp., and Hewlett Packard, all reported strong increases in recent periods.

General Automation in Anaheim saw its first-half earnings before taxes exceed results for the full fiscal 1972, with record results in the second quarter.

In the half, earnings, including a $586,000 tax credit, totaled $1.5 million or 68 cents a share for the period ended Jan. 31. This compared with earnings of $611,000 or 36 cents a share, including a $302,000 special credit for the first half of 1972.

Revenues rose to $12.1 million from $6.5 million in the previous year's period.

Quarter Up Also

In the second quarter, sales rose 70% to $6.2 million from $3.6 million a year ago. Earnings rose to $726,000 or 34 cents a share compared with $402,000 or 23 cents in the year-ago period.

At Microdata, based in Irvine, first quarter earnings doubled to $238,580 or 18 cents a share compared with $114,820 or 9 cents a share in the year-ago period ended Nov. 30.

Revenues rose 67% to almost $2 million from $1.9 million.

Backlog at the end of the period was at a record high, and prospects for record sales during the second quarter are excellent, according to President Donald W. Fuller.

Better at HP

Earnings for the first quarter at Hewlett-Packard were even better than previously announced, because of the discovery of a $1.4 million overstatement of marketing expenditures.

For the quarter ended Jan. 31, the firm earned $8.7 million or 33 cents a share, a 31% increase over the $6.6 million or 25 cents a share earned in the first quarter of fiscal 1972.

Revenues totaled almost $127 million compared with almost $98 million for the same year-ago quarter.

CSC Adds $9 Million Writeoff, But Still Sees Profitable Year

LOS ANGELES – Computer Sciences Corp. is taking a $9.3 million downward adjustment in addition to the previously announced $2.3 million writeoff from cancellation of the New York City Off-Track Betting Corp. contract.

But thanks to a $16.8 million gain from the sale of Commonwealth Services Inc. subsidiary, the company said it "anticipates positive net earnings" for its fiscal year ending March 30.

The firm will write down $6 million on its computer leasing portfolio, while a $3.3 million charge results from establishment of reserves for potential contract losses, government contract audit adjustments and other miscellaneous items.

Net Book Value

With the $6 million charge, the IBM 360s owned and leased by Computer Sciences will have a current net book value of $11.3 million. The original purchase cost was $26.1 million.

The company said it will depreciate the $11.3 million over a five year remaining life with a salvage value of 10% of the resultant net book value.

The charge does not affect the firm's other computer equipment, primarily Univac 1108s.

Terminal Equipment Expects '73 Profit

POMPTON LAKES, N.J. – With steadily decreasing losses, Terminal Equipment Corp. expects to show a profit in 1973.

Revenues for the year ended Sept. 30 climbed 10 times from last year's base to $764,399, and losses were cut to $83,689 or 16 cents a share compared with $552,115 or $1.35 a share last year.

The company expects revenues in the first half of 1973 to exceed the total for all of 1972.

Nickels & Dimes

Scan-Data has obtained $17 million in financing arrangements from Alanthus and the First Pennsylvania Bank. Scan-Data agreed to sell Alanthus up to $5 million of leased data entry systems for the next three years, and will issue five-year warrants to Alanthus to purchase up to 180,000 shares at $3/share.

The agreement with the bank provides for a $2 million revolving credit line through March 31, 1974.

$$$

Entrex had its first profitable month in December, and anticipates profitability throughout 1973. The firm is about to become No. 3 among key-to-disk makers in terms of number of stations installed, it said.

$$$

About two-thirds of the $187,000 year loss at **Computer Dynamics** resulted from acquisition-related program development and conversion costs early in the year, according to the firm.

$$$

Earnings at **TEC** more than tripled for the eight months ended Feb. 28, totaling $384,075 or 56 cents a share compared with $111,371 or 16.3 cents in the same period a year ago. Revenues rose to $4.4 million from $2.9 million a year ago.

$$$

Name changes: Shareholders of **Comperipherals** voted to call the firm Facit-Addo; at the end of March **DPA** is expected to become Pioneer Texas; although the DP subsidiary will continue to use the DPA name; and **Management Data Corp.** has changed its moniker to MDC.

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The $35 million multicurrency financing agreement between **Mohawk Data Sciences** and the First National Bank of Chicago has been signed [CW, Feb. 9].

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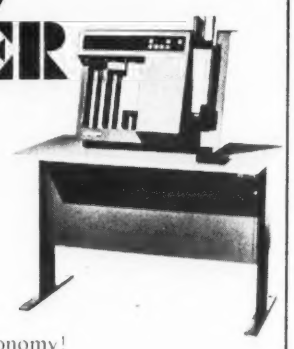

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Computerworld Stock Trading Summary

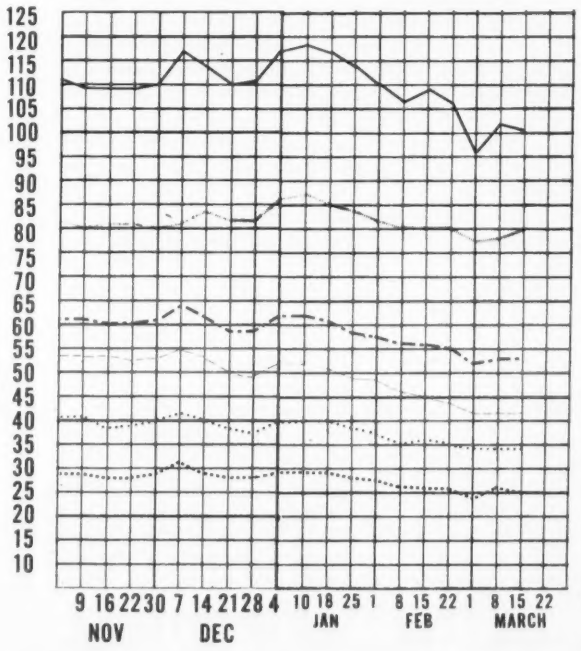
All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES THURSDAY, MARCH 15, 1973

EXCH		1972-73 RANGE (1)	CLOSE MAR 15 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	1 3/4	+ 1/8	+7.6
A	APPLIED DATA RES.	3- 7	3 1/2	0	0.0
O	APPLIED LOGIC	1- 4	2 1/2	0	0.0
N	AUTOMATIC DATA PROC	66- 99	68 1/4	- 1/2	-0.7
O	BRANDON APPLIED SYST	1- 2	5/8	0	0.0
O	COMPUTER DIMENSIONS	3- 14	3	0	0.0
O	COMPUTER DYNAMICS	1- 4	7/8	0	0.0
O	COMPUTER NETWORK	2- 7	2	0	0.0
N	COMPUTER SCIENCES	4- 10	4 1/8	0	0.0
O	COMPUTER TASK GROUP	1- 2	1 3/8	- 1/8	-8.3
O	COMPUTER TECHNOLOGY	2- 8	3	+ 1/4	+9.0
O	COMPUTER USAGE	6- 14	5 3/4	- 3/4	-11.5
N	COMPUTING & SOFTWARE	9- 28	8 3/4	- 7/8	-9.0
O	COMRESS	1- 3	3/4	0	0.0
O	COMSHARE	5- 10	6 1/2	- 3/8	-5.4
O	DATATAB	4- 9	2 7/8	- 3/8	-11.5
O	EDP RESOURCES	1- 8	1 5/8	0	0.0
A	ELECT COMP PROG	1- 5	1 3/8	- 1/8	-8.3
N	ELECTRONIC DATA SYS.	43- 65	49 1/2	-2 1/2	-4.8
O	INFORMATICS	3- 11	4	+ 3/8	+10.3
O	I.O.A. DATA CORP	1- 3	3/4	0	0.0
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYDATA CORP	7- 13	9	+ 3/8	+4.3
O	LOGICON	4- 9	5 5/8	0	0.0
A	MANAGEMENT DATA	3- 10	3	0	0.0
O	NATIONAL CSS INC	8- 41	36 3/4	-1 3/4	-4.5
O	NATIONAL INFO SRVCS	1- 5	1 3/4	- 1/8	-6.6
P	ON LINE SYSTEMS INC	5- 19	15 7/8	- 3/4	-4.5
N	PLANNING RESEARCH	4- 17	4 1/8	+ 3/8	+10.0
O	PROGRAMMING METHODS	20- 25	22 7/8	- 3/4	-3.1
O	PROGRAMMING & SYS	1- 2	7/8	+ 1/8	+16.6
O	RAPIDATA INC	5- 27	19 1/2	- 1/2	-2.5
O	SCIENTIFIC COMPUTERS	1- 4	1 1/2	0	0.0
O	SIMPLICITY COMPUTER	1- 5	2 1/8	- 1/4	-10.5
O	TBS COMPUTER CENTERS	3- 6	3	- 1/4	-7.6
O	TCC INC	1- 3	1/4	0	0.0
O	TYMSHARE INC	7- 12	8 3/8	0	0.0
O	UNITED DATA CENTER	5- 8	5 3/4	+ 1/4	+4.5
N	UNIVERSITY COMPUTING	7- 26	10 1/8	+1	+10.9
A	URS SYSTEMS	6- 10	6 1/8	+ 1/2	+8.8
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	23- 49	22 3/4	-1 1/4	-5.2
O	ADVANCED MEMORY SYS	12- 23	18 1/2	+ 1/4	+1.3
N	AMPEX CORP	5- 15	5 5/8	- 1/4	-4.2
O	ANDERSON JACOBSON	4- 8	6 1/4	+ 1/2	+8.6
O	BEEHIVE MEDICAL ELEC	1- 8	8	+1	+14.2
A	BOLT,BERANEK & NEW	5- 21	10 1/2	- 1/2	-4.5
N	BUNKER-RAMO	7- 14	6 3/4	- 1/8	-1.8
A	CALCOMP	9- 25	12 1/8	+ 3/8	+3.1
O	CAMBRIDGE MEMORIES	9- 15	11 3/8	+ 1/8	+1.1
O	CENTRONICS DATA COMP	6- 28	22	+1 1/2	+7.3
O	CODEX CORP	6- 25	14	0	0.0
O	COGNITRONICS	1- 5	1 5/8	+ 1/8	+8.3
O	COMPUTER COMMUN.	1- 7	2 5/8	+ 1/4	+10.5
A	COMPUTER EQUIPMENT	2- 4	2 1/4	0	0.0
O	COMPUTER MACHINERY	7- 13	11	0	0.0
O	COMPUTER TRANSCEIVER	2- 9	2 3/4	+ 1/8	+4.7
A	COMPUTEST	3- 9	4 1/2	0	0.0
N	CONRAC CORP	24- 39	25 1/8	+ 7/8	+3.6
A	DATA PRODUCTS CORP	3- 7	3 1/2	+ 1/8	+3.7
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	3 5/8	- 1/4	-6.4
O	DI/AN CONTROLS	3- 8	3 1/4	- 1/8	-3.7
N	ELECTRONIC M & M	3- 8	3 1/2	- 3/8	-9.6
O	FABRI-TEK	2- 5	3 1/2	+ 1/8	+3.7
O	GENERAL COMPUTER SYS	6- 16	8	- 1/2	-5.8
N	GENERAL ELECTRIC	59- 74	67 5/8	- 5/8	-0.9
N	HAZELTINE CORP	7- 13	7 3/4	+1	+14.8
O	INFOREX INC	14- 36	15 1/4	-2 3/4	-15.2
O	INFORMATION DISPLAYS	1- 5	5/8	0	0.0
O	INFORMATION INTL INC	8- 25	11 1/4	- 1/4	-2.1
A	LUNDY ELECTRONICS	6- 14	6 5/8	- 1/2	-7.0
O	MANAGEMENT ASSIST	1- 1	1/2	0	0.0
A	MILGO ELECTRONICS	15- 44	20	-1	-4.7
N	MOHAWK DATA SCI	8- 27	7 5/8	- 5/8	-7.5
O	ODEC COMPUTER SYST.	3- 12	4 1/2	+ 1/4	+5.8
O	OPTICAL SCANNING	2- 16	4 3/4	+ 1/2	+11.7
O	PERTEC CORP	5- 17	6 1/2	+ 1/4	+4.0
O	PHOTON	3- 15	4	- 1/2	-11.1
A	POTTER INSTRUMENT	6- 21	6	- 1/2	-7.6
O	PRECISION INST.	2- 13	4	0	0.0
O	RECOGNITION EQUIP	5- 15	5 3/4	0	0.0
N	SANDERS ASSOCIATES	11- 21	11	- 5/8	-5.3
O	SCAN DATA	3- 13	2 3/4	- 1/8	-4.3
O	STORAGE TECHNOLOGY	17- 39	24 1/2	+2	+8.8
O	SYCOR INC	7- 11	9	0	0.0
O	TALLY CORP.	8- 15	10 1/8	+ 1/2	+5.1
N	TEKTRONIX INC	34- 64	42 1/8	+ 1/8	+0.2
N	TELEX	4- 15	4 1/2	- 1/2	-10.0
O	WILTEK INC	10- 26	13	-2 1/2	-16.1
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	7	+2	+40.0
A	BARRY WRIGHT	9- 14	9 3/4	+ 1/2	+5.4
A	DATA DOCUMENTS	17- 26	18 3/8	- 1/8	-0.6
O	DUPLEX PRODUCTS INC	8- 16	9 1/4	0	0.0
N	ENNIS BUS. FORMS	6- 10	6 3/8	+ 1/4	+4.0
O	GRAHAM MAGNETICS	15- 27	17 3/4	+ 1/4	+1.4
O	GRAPHIC CONTROLS	11- 15	10 3/4	- 3/8	-3.3
N	3M COMPANY	76- 88	86	+1	+1.1
O	MOORE CORP LTD	42- 59	58 3/4	+3 1/4	+5.8
N	NASHUA CORP	48- 62	52 5/8	- 7/8	-1.6
O	REYNOLDS & REYNOLD	37- 77	49 5/8	- 1/8	-0.2
O	STANDARD REGISTER	14- 20	16 1/2	-1 1/4	-7.0
O	TAB PRODUCTS CO	14- 23	18	- 1/2	-2.7
N	UARCO	20- 28	20 1/8	- 3/4	-3.5
A	WABASH MAGNETICS	6- 11	6 1/4	+ 1/8	+2.0
N	WALLACE BUS FORMS	21- 26	23 5/8	+ 1/8	+0.5
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-244	238 1/4	- 1/8	0.0
N	COLLINS RADIO	14- 27	24 1/4	- 1/8	-0.5
N	CONTROL DATA CORP	43- 78	46 1/8	- 1/4	-0.5
O	DATA GENERAL CORP	39-131	44 1/4	- 1/4	-0.5
O	DIGITAL COMP CONTROL	3- 25	4 1/2	+ 1/2	+12.5
N	DIGITAL EQUIPMENT	72-105	84 1/2	-3 3/4	-4.2
N	ELECTRONIC ASSOC.	6- 13	6 5/8	0	0.0
A	ELECTRONIC ENGINEER.	6- 14	10 3/4	+1 1/2	+16.2
N	FOXBORO	23- 41	29 3/4	+ 1/4	+0.8
O	GENERAL AUTOMATION	13- 55	38	-5	-11.6
O	GRI COMPUTER CORP	2- 5	1 7/8	0	0.0
N	HEWLETT-PACKARD CO	46- 94	91	- 1/8	-0.1
N	HONEYWELL INC	106-170	116	+6 1/4	+5.6
N	IBM	333-451	444	+3 1/2	+0.7
O	INTERDATA INC	8- 16	9 3/8	- 1/4	-2.5
N	MEMOREX	10- 38	9 7/8	- 1/4	-2.4
O	MICRODATA CORP	5- 10	8 1/4	0	0.0
N	NCR	27- 38	31	+2 7/8	+10.2
N	RAYTHEON CO	27- 47	29 1/4	-1 5/8	-5.2
N	SPERRY RAND	30- 50	41 5/8	-1 3/4	-4.0
A	SYSTEMS ENG. LABS	4- 16	5	- 3/4	-13.0
N	VARIAN ASSOCIATES	14- 22	14 3/4	- 7/8	-5.5
N	WANG LABS.	21- 61	21	-2 5/8	-11.1
N	XEROX CORP	121-172	168 1/8	+3 7/8	+2.3
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 18	3 1/8	- 5/8	-16.6
O	BRESNAHAN COMP.	1- 3	1 1/4	0	0.0
O	COMDISCO INC	3- 18	12 5/8	- 3/4	-5.6
O	COMMERCE GROUP CORP	5- 11	4 5/8	- 1/8	-2.6
O	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	4- 14	4 5/8	+ 1/4	+5.7
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	7 1/2	- 1/4	-3.2
M	DATRONIC RENTAL	2- 4	2 1/8	- 1/8	-5.5
A	DCL INC	2- 10	2 1/8	0	0.0
A	DEARBORN-STORM	16- 26	17 7/8	-2 7/8	-13.8
A	DPA, INC.	5- 8	6 3/8	0	0.0
A	GRANITE MGT	5- 11	5 1/8	+ 1/4	+5.1
A	GREYHOUND COMPUTER	5- 11	5	0	0.0
A	ITEL	7- 12	8 1/8	+ 1/8	+1.5
N	LEASCO CORP	12- 24	12 1/2	-1 1/4	-9.0
O	LEASPAC CORP	6- 15	5 3/4	- 1/4	-4.1
O	LECTRO MGT INC	1- 4	1 1/8	0	0.0
A	ROCKWOOD COMPUTER	2- 7	2 3/8	+ 1/2	+26.6
O	SYSTEMS CAPITAL	3- 20	9 1/2	- 7/8	-8.4
N	U.S. LEASING	19- 35	25 3/4	- 5/8	-2.3

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

SANDERS ASSOCIATES
Three Months Ended Jan. 26

	1973	1972
Shr Ernd	$.24	$.12
Revenue	43,095,000	36,601,000
Tax Cred	318,000	133,000
Earnings	1,094,000	559,000
6 Mo Shr	.46	.22
Revenue	81,789,000	66,157,000
Tax Cred	617,000	237,000
Earnings	2,113,000	1,019,000

SYSTEMS ENGINEERING LABORATORIES
Six Months Ended Dec. 29

	1972	1971
Shr Ernd	$.20	$.23
Revenue	7,563,017	7,082,080
aSpec Cred	349,709	201,832
Earnings	539,390	581,212

a-Tax credit and gain from sale of building and land.

LOGICON
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.09	$.14
Revenue	3,011,261	2,703,648
Earnings	77,890	124,309
9 Mo Shr	.40	.42
Revenue	9,176,514	8,099,022
Earnings	349,272	365,579

CONTROL DATA
Year Ended Dec. 31

	1972	1971
Shr Ernd	$4.06	$2.37
Revenue	664,000,000	571,187,848
Spec Cred	1,892,000	72,801
Earnings	62,398,000	35,780,891

GREYHOUND COMPUTER
Year Ended Dec. 31

	1972	a1971
Shr Ernd	$.95	$.88
Revenue	46,918,000	51,090,000
Spec Chg	.....	b614,000
Earnings	4,107,000	3,807,000
3 Mo Shr	.21	.16
Revenue	11,327,000	12,688,000
Spec Chg	.....	b614,000
Earnings	901,000	694,000

a-Restated. b-Loss on settlement of litigation.

INFORMATICS
Nine Months Ended Dec. 23

	1972	1971
Shr Ernd	$.23	$.19
Revenue	13,273,000	12,733,000
Disc Op	.....	(112,000)
Earnings	349,000	296,000

INTERDATA
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.45	$.09
Revenue	12,814,900	8,762,500
Tax Cred	349,700	110,600
Earnings	894,900	155,800
3 Mo Shr	.09	.09
Revenue	3,544,900	2,528,200
Tax Cred	.....	110,600
Earnings	200,200	158,100

SINGER
Year Ended Dec. 31

	1972 (000)	a1971 (000)
bShr Ernd	$4.60	$3.73
Revenue	2,217,492	2,099,454
Earnings	87,465	71,544
b3 Mo Shr	1.65	1.40
Revenue	608,943	596,051
Earnings	30,972	27,056

a-Restated. b-Fully diluted.

COMPUTER HORIZONS
Nine Months Ended Nov. 30

	1972	1971
Shr Ernd	$.14	$.12
Revenue	1,556,630	967,615
Earnings	84,460	43,869

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